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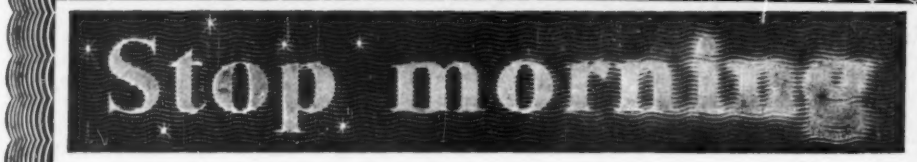

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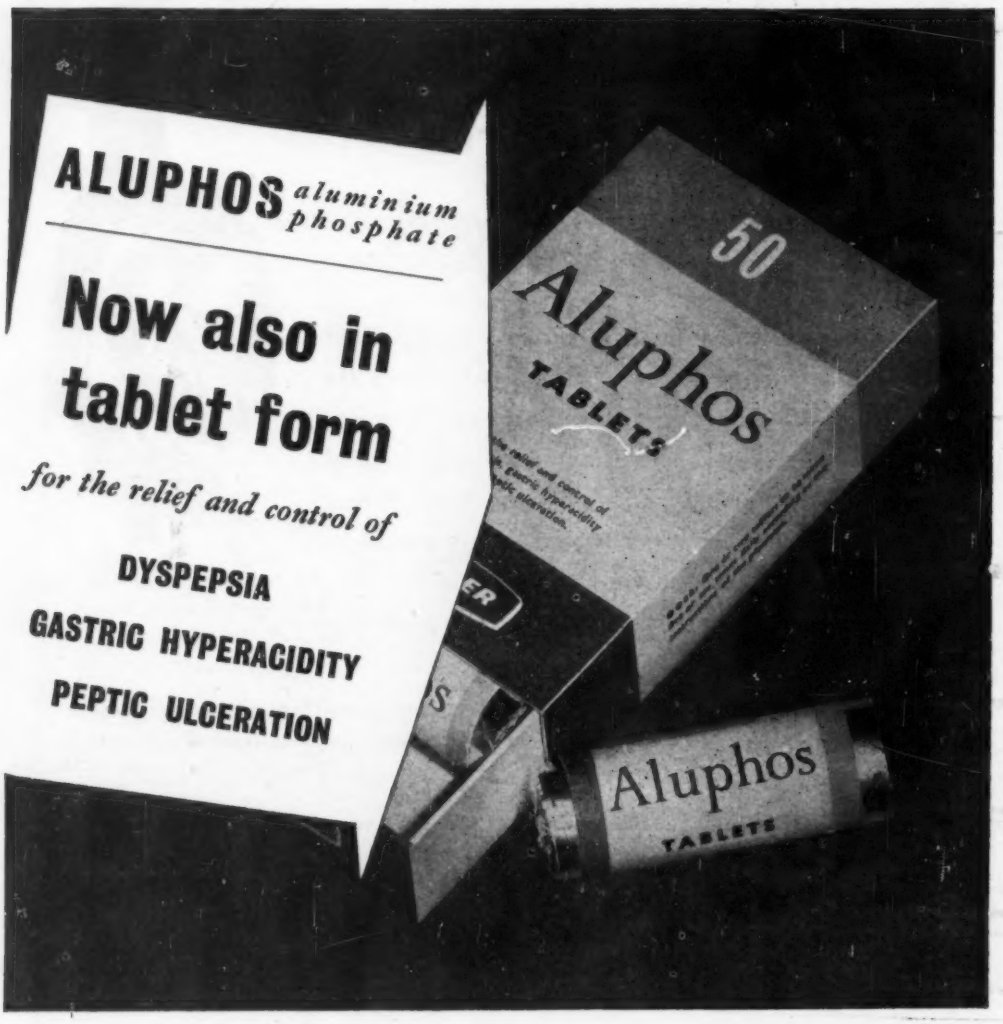

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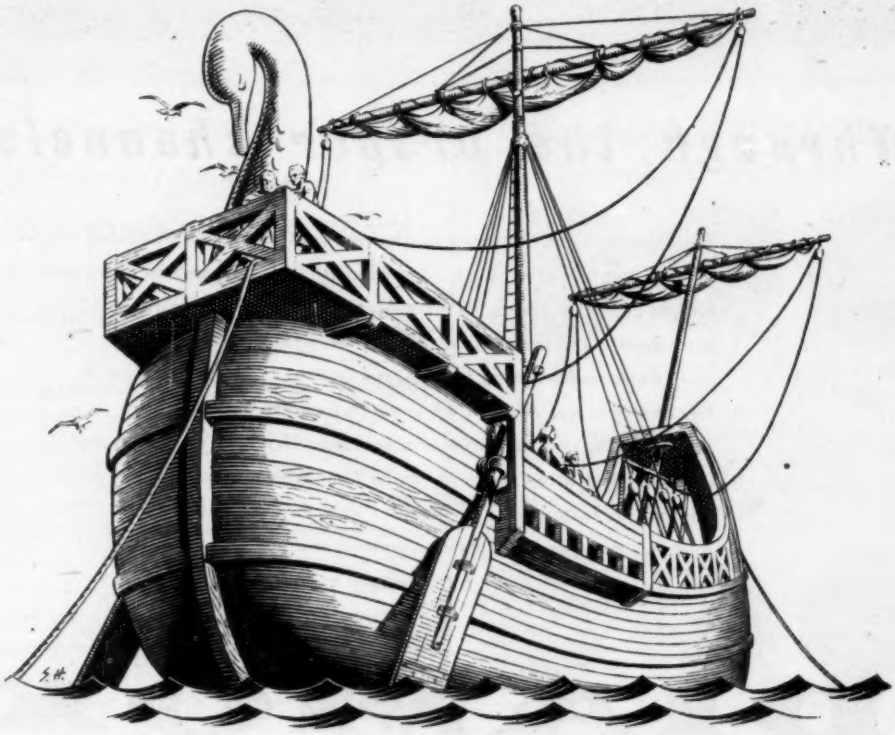

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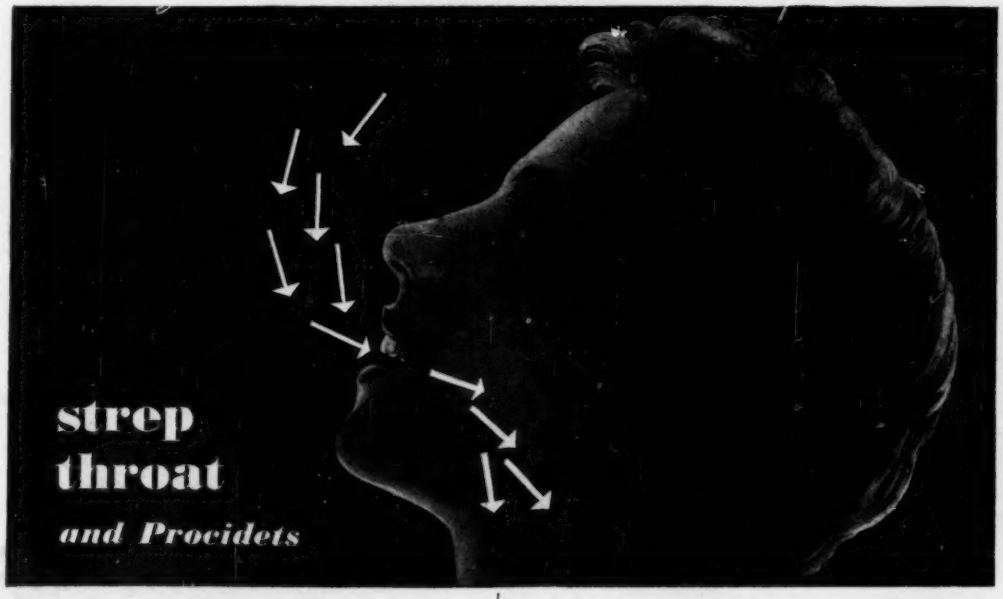

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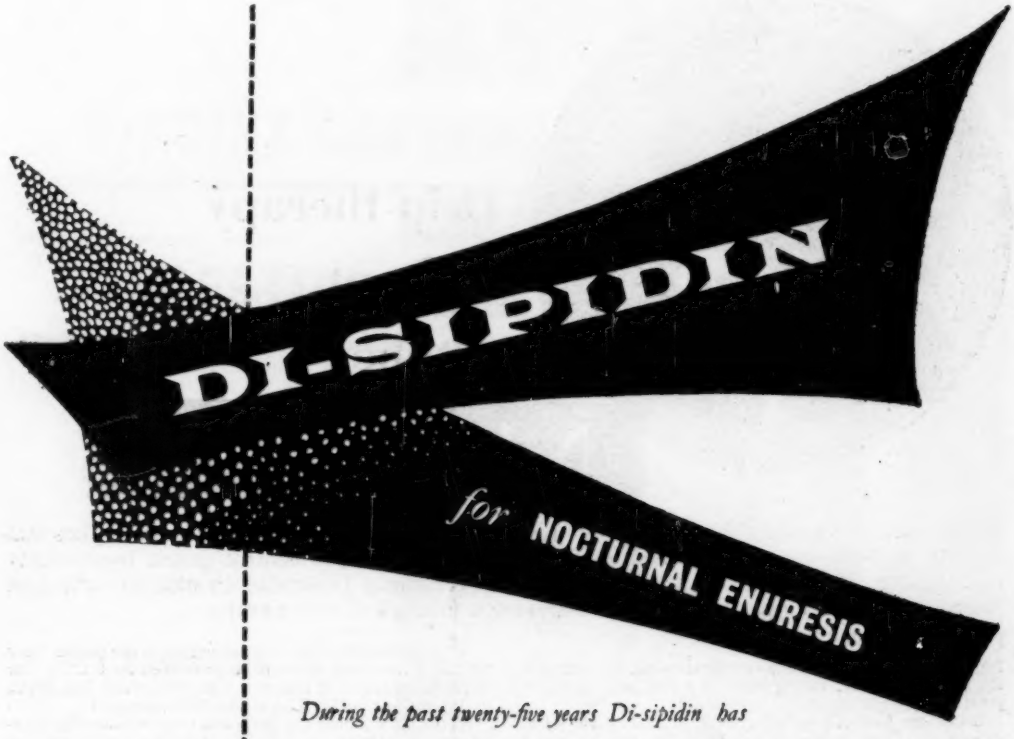

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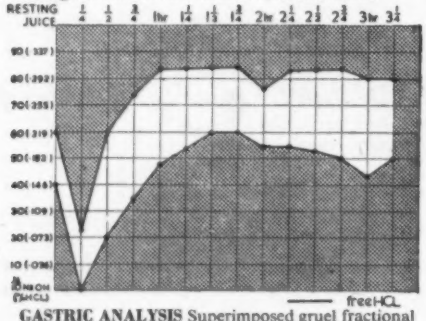

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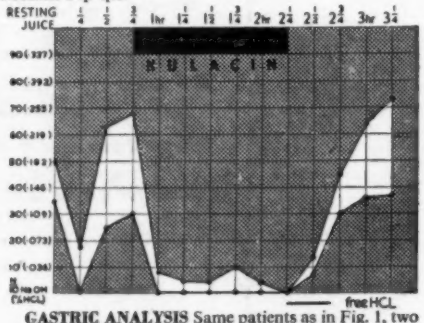

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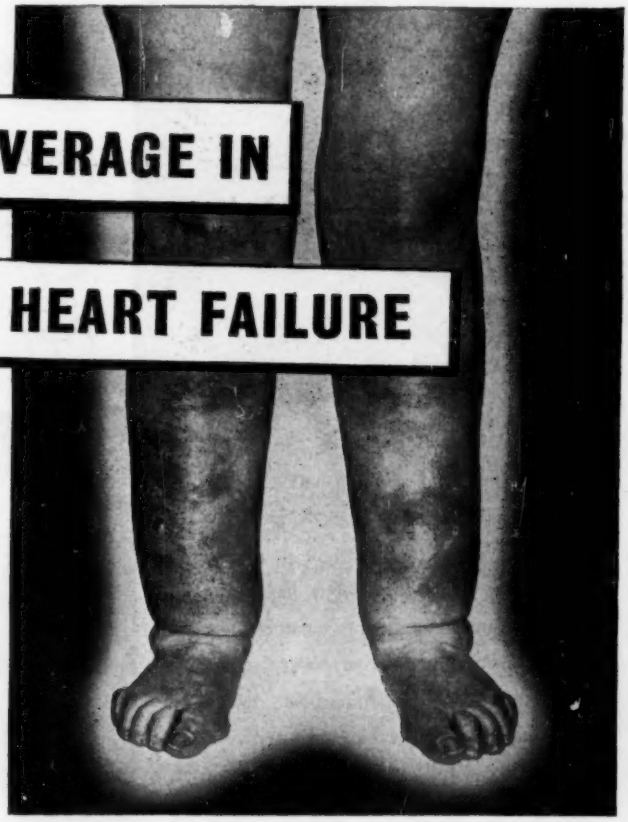

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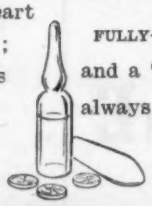

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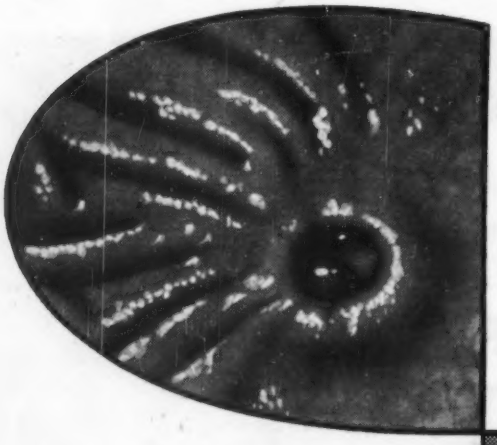

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Peptic Ulceration

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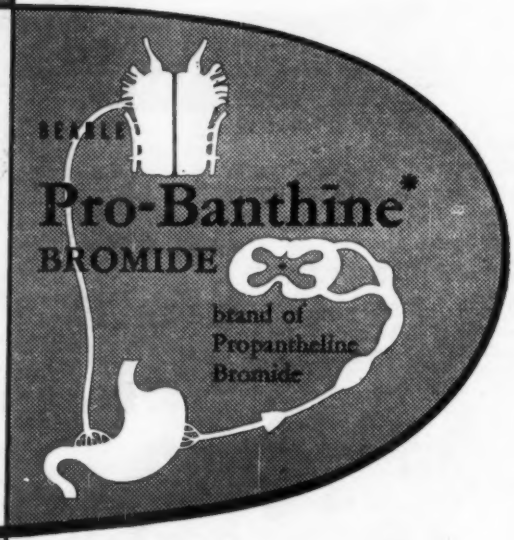

"Pro-Banthine" is safe, easily administered, and devoid of unpleasant taste. In most cases, oral treatment with "Pro-Banthine" gives considerable relief of ulcer pain, and there is marked improvement in the patient's condition 48 to 72 hours after commencing treatment. Dosage is usually 15 or 30 mg. (1 or 2 tablets) four times daily. "Pro-Banthine" is available in bottles of 40, 100 and 1,000 tablets, each tablet containing 15 mg. of Propantheline Bromide.

Literature on request

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BECANTYL

(Sodium 2:6 ditertiarybutylnaphthalene monosulphonate)

Suppresses cough with no undesirable side effects

Sodium 2:6 ditertiarybutylnaphthalene monosulphonate (Becantyl), a product of original research, is a new agent that is specific in suppressing cough. It is unrelated to morphine and guaiacol.

BECANTYL does not cause constipation, anorexia, drowsiness or any other undesirable side-effects; being devoid of side-effects, **BECANTYL** may be prescribed for children and the aged.

Clinical experience supports the value of **BECANTYL** in suppressing all types of cough, **BECANTYL** may be prescribed whenever the treatment of cough is indicated.

BECANTYL is presented in 4 fluid ounce, 40 fluid ounce, and 80 fluid ounce bottles.

BIBLIOGRAPHY

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Thérapie, 1954, **9**, No. 6, p. 737

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BUFFERIN-

THE NEW BETTER TOLERATED ANALGESIC

A MOST SUCCESSFUL ANSWER TO THE PROBLEM

Following last year's report[1] by the Joint Committee of the Medical Research Council and Nuffield Foundation, many practitioners have returned to aspirin therapy in place of cortisone. Effective therapy with aspirin and similar salicylates unfortunately has been hampered by the problem of gastric irritation, which affects as many as 42% of arthritic patients. Bufferin, the new analgesic which reduces gastric intolerance to a negligible minimum, is a most successful answer to the problem.

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Bufferin combines acetylsalicylic acid with the antacids aluminium glycinate and magnesium carbonate (gentle buffering acids which do not produce "acid rebound"), and is well tolerated even by arthritics. In blind trials amongst arthritics with proven intolerance to ordinary aspirin, 70% had no gastric symptoms after taking large doses of Bufferin over periods of 4 to 16 months.[2] Previous studies amongst the general population showed that only 1 patient out of 238 had any distress after taking 10 grains of Bufferin.[3]

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Not only is Bufferin better tolerated by the stomach than ordinary aspirin, but its pain relieving ingredient is absorbed twice as quickly into the blood stream. Trials show that on an average the 10-minute salicylate level after taking Bufferin was more than 20% higher than the 20-minute level after taking ordinary aspirin.[3]

NO EQUIVALENT IN BRITISH PHARMACOPOEIA

Bufferin is unique in incorporating aluminium glycinate and magnesium carbonate as buffering agents and has no equivalent in the British Pharmacopœia or National Formulary. This fully justifies the prescription of Bufferin on E.C.10.

References: 1. *British Medical Journal*, 1954, **1**: 1223. 2. *Journal of the American Medical Association June* 4 1955 p. 387. 3. *J. Amer. Pharm. Assoc.* 1950, **39**: 21.

Further information: A detailed, fully documented leaflet and sample available on request to the makers, Bristol-Myers Co. Ltd., Dept. C, 211 Blackfriars Road, London, S.E.1.

BUFFERIN TRADE MARK
ANTACID ANALGESIC

Formula: Acetylsalicylic Acid 5 gr.: Aluminium Glycinate ¾ gr.: Magnesium Carbonate 1½ gr.

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Hæmorrhoidal Ointment Prescribable on E.C.10

For the treatment of haemorrhoids, pruritus ani and painful inflammatory and eczematous lesions of the skin in the anal region. HEMATRIX is designed for the immediate relief of itching and localised pain through progressive treatment of the enlarged and varicose tissues by mild antacid astringent action. HEMATRIX acts promptly, effectively and thoroughly, promoting the disappearance of subjective symptoms. HEMATRIX contains as active ingredients: Benzocaine 6%. Alum. Oxide 7.5%, Zinc Oxide 15%. Bals. Peruv. 2.5%, in a suitable emollient vehicle. Presented in tubes complete with extension introducer for internal application.

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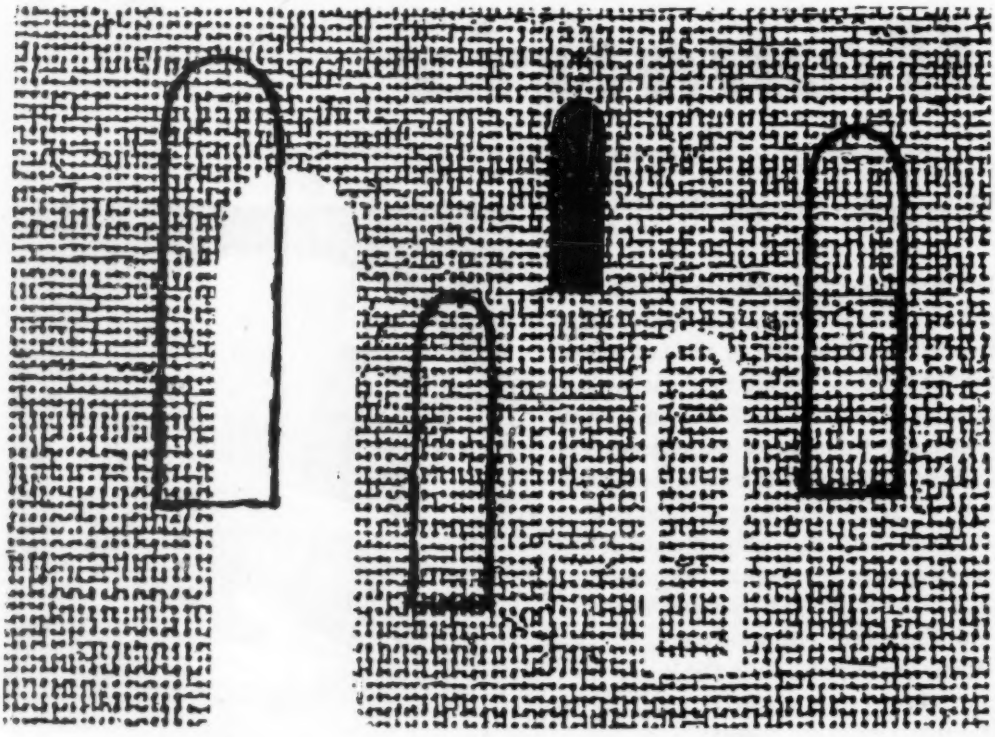

the shape of relief . . .

The shape of a haemorrhoidal suppository is almost as important as the nature of its active ingredients.

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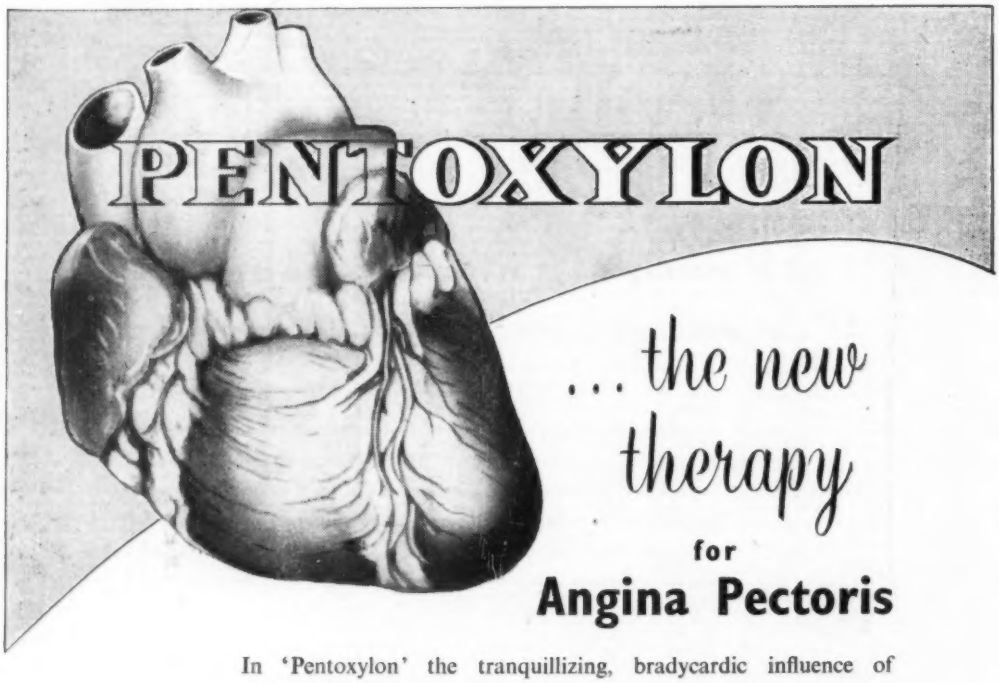

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North-West Med. (1955) 54: 34

Dose: 1 tablet four times a day, before meals, increased later if necessary.

RIKER

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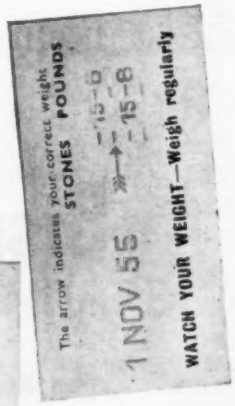

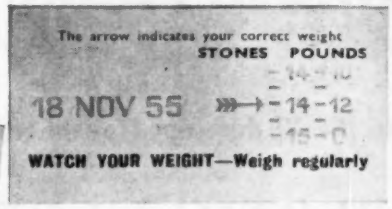

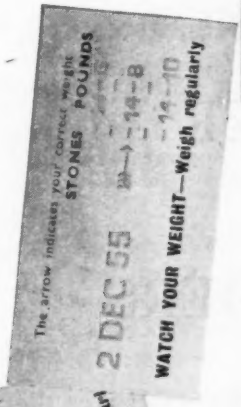

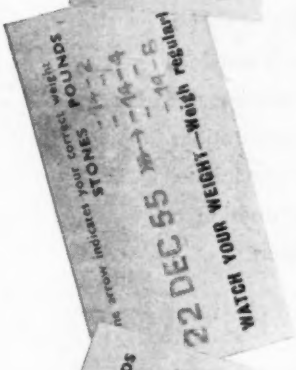

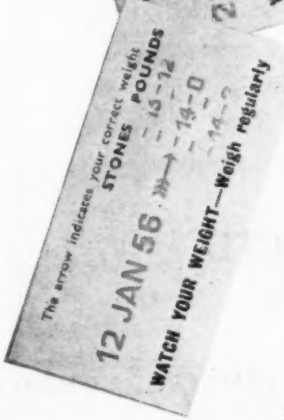

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PRELUDIN is an appetite controlling agent. It acts quickly and effectively without risk by controlling the patient's appetite and breaking the psychogenic overeating habit, thus curbing food intake.

It enables the patient to lose weight safely and without mental strain by strengthening adherence to a prescribed diet.

PRELUDIN, in recommended dosage, unlike dexamphetamine, does *not* raise the blood pressure, does *not* affect the heart, and does *not* create excessive mental stimulation. It is the prescription of choice in *all* cases of obesity—especially those with cardiovascular disorders—because it reduces the risk of reducing.

P·R·E·L·U·D·I·N

brand of 2 - phenyl - 3 - methyl - tetrahydro - 1, 4 - oxazine - hydrochloride

—the safe prescription for obesity

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Each ampoule of Hyalase contains 1500 international units

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Hyaluronidase

Hyalase ampoules (1500 international units) are available in boxes of 5, 20 and 100.

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Lancet, 1955, *ii*, 1183

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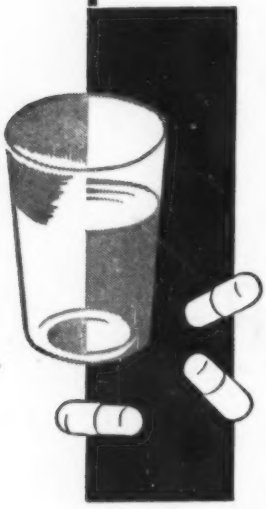
COMPLETELY NEW ORAL PENICILLIN



PENICILLIN-V, LILLY is a completely new penicillin compound for oral use. Stable in the presence of gastric secretions, PENICILLIN V is fully effective orally and gives higher and more prolonged blood levels than any other oral penicillin.

It is therapeutically comparable with parenteral penicillin ; high dosage is unnecessary.

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FOR SUPPRESSION OF

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'PHYSEPTONE' LINCTUS has many advantages as a suppressant of unproductive cough. Though comparable in effectiveness to diamorphine linctus, it is free from the drawbacks of the latter—it carries negligible risk of addiction, does not constipate and seldom causes other side-reactions.

'PHYSEPTONE' LINCTUS has a direct suppressive action on the cough reflex. It is especially valuable in such conditions as bronchiectasis, pertussis, post-influenzal tracheitis, chronic passive pulmonary congestion and pulmonary tuberculosis.

'PHYSEPTONE' LINCTUS contains 2 mgm. of methadone hydrochloride in each fluid drachm (the recommended adult dose). For children it should be diluted with simple syrup in the proportion of one part linctus and seven parts syrup—one to two teaspoonfuls (0·25—0·5 mgm.) of this *diluted* linctus to be given according to the age of the child.

'PHYSEPTONE' LINCTUS

BURROUGHS WELLCOME & CO. (THE WELLCOME FOUNDATION LTD.) LONDON

choice of approach

When the decision has been made for sedative or expectorant therapy in the management of cough, appropriate selection may be made from Allen & Hanburys outstanding cough preparations—ETHNINE, a sedative elixir, or PIRITON Expectorant Linctus.

ETHNINE. The employment of pholcodine as the active ingredient in Ethnine renders this preparation an effective cough sedative for the suppression of exhausting and harmful unproductive cough in children and adults.

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ETHNINE

CONTAINING PHOLCODINE

Bottles of 4 and 80 fluid ounces containing 4 mg. PHOLCODINE (morpholinylethylmorphine) in each teaspoonful (4 c.c.).

PIRITON Expectorant Linctus. This carefully chosen combination of an improved antihistaminic of low toxicity with expectorants, is unsurpassed in therapeutic activity where a stimulant expectorant linctus is indicated.

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EXPECTORANT LINCTUS

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HOW A LAWYER THINKS *

LORD RADCLIFFE
P.C., G.B.E., M.A. Oxfd
A LORD OF APPEAL IN ORDINARY

MANY people are becoming more and more vexed by the problem of communication. There seems some reason to think that, as our technical mastery of the means of communication increases, there is a corresponding decrease in our power to employ those means in any way that is worthy of their possibilities. Whether this is more than a coincidence I do not know. What is at any rate worthy of remark is that we still appear to understand each other so little.

If we lived in a less complicated, less interdependent form of society, the want of understanding might be of no particular importance. Earlier societies have got on, often happily enough, with a minimum of common understanding between their different classes and sections. Retrospect may to some extent flatter English society of an earlier age, but it was probably rather exceptionally fortunate in the range of common feeling that united it, despite huge barriers or gaps. It would not have been altogether nonsense to talk of a common culture informing that earlier society: less misleading than it might be to talk of it today. Most of what now look like the prevailing causes—a general and dominant religious faith, a still unbroken association with the land, the influence of insularity, the sheer effect of a simple social organism—have ceased to operate, even though some of the institutions that were founded upon them may still survive. And at a period when our complex relationships make it essential that we should understand each other or perish, we understand each other, perhaps, less and less.

If you do not have common ideas, you cannot have a common speech. That is, if the words that a speaker uses either do not mean the same thing to his listener as they mean to him, or, more simply, do not mean anything to the listener at all, there is either misunderstanding or no understanding. In either event there is no communication in any valuable sense of the word. It is hard enough for the specialist to realise this; but at least he is conscious of some necessity for a free translation, if he is to make himself generally understood. But the realisation is harder yet, I believe, for the man of general literary education—the man, let us say, whose education was directed towards or culminated in the arts degree at a university. For the conceptions which were implanted in him by that form of education, itself derived from the common culture of the older Europe, assume a certain fixed relationship between words and ideas, and assume moreover that, because of that relationship, words, properly combined, are an adequate vehicle for the expression of ideas. Deny him the validity of that assumption and he becomes something of a lost man in the modern world. That sovereign instrument for communicating ideas, which he thought a bridge between his own and other minds, becomes only one more of those esoteric jargons in which specialists veil the sign language of their tribe. Puffs of smoke on the hill, knife markings on a tree, rock carvings of a forgotten pictogram. And, since many of the leading men in our public and professional life have been raised as the products of a literary general education of this kind, and there are even some who think it a good thing that they should have been, it is no wonder that the problem of communicating meaning, or, to put it another way, the problem of expounding ideas, is today thought of as a serious one. For these men may understand each other, if they listen, but it is very doubtful whether they possess the ability to make themselves at all generally understood.

Essentially the problem is not one that turns upon a relationship between leader and led or between those who prophesy and those who are prophesied to. We live, of course, in a managerial age, and management—political, social, or industrial—is very largely the art of communicating ideas in a persuasive form. But everyone has always lived in a managerial age of some kind. It distorts the problem to think of communication in terms of "putting things over," an amiable method of getting one's own way. So understood, the art of communication appears as little more than one of the techniques of public relations. It seems to me much more fruitful to approach the problem as a search for a modern art of generating ideas by a free exchange of them. We ought to try to gather together at any rate the cultured classes—pass the phrase for the moment without assuming that it is necessarily priggish—from the isolation which the specialisation of learning is tending to bring about. Because this isolation is a harmful thing and it is something of a new phenomenon in European life. It is a very natural product of two things which press upon us all today—the lack of any agreed curriculum of general education, and the great additions to specialised knowledge in so many fields, which give so few of us enough time to put our noses outside our own books. It is natural enough, under prevailing conditions: but more and more its effect will be that even the professional classes will understand each other's concepts and language less and less, and the common ground of enlightened opinion on which so many people have stood firmly in the past will shrink to a negligible plot. So let us be upon our guard against this new threat of Enclosures!

* * *

This is rather too grave an introduction for the simple reflections that are to follow. But my own professional training has been in the discipline of the Law; and when the Royal Society of Medicine did me the honour of inviting me to deliver the Lloyd Roberts lecture, adding, considerately, "the subject is not necessarily medical," I thought to myself that it is sometimes more interesting to know how a thing works than what it does. How does a lawyer work? It might make some contribution to the mutual understanding between Medicine and Law if I were to reflect a little upon the main influences that govern a lawyer's way of thought. Any worthwhile profession sets its mark upon a man just as surely as the ancient callings did—sets its mark upon his mouth and his hands and his eyes, and speaks a little through his voice. But apart from the physical uniform, it imposes, too, certain patterns of ideas or modes of thought, and unless these are fairly understood the language which is their vehicle of expression remains a foreign language. People used to speak of the three learned professions, the Church, Medicine, and the Law. Now university research has so much extended that Learning itself has become a profession. But how far do we understand each other today, where we hope to go, and where we would like to stand?

* * *

I believe that one of the noteworthy things about the lawyer in our present age is that the system of knowledge which constitutes his learned study is not itself a progressive one. Progressive, of course, is an equivocal term. But the world today is humming with the murmur of those who study and apply the expanding sciences and who see before them an unconfined field of experiment and discovery. Physics, Chemistry, Biology: I suppose that there can be few people who feel themselves to have

* The Royal Society of Medicine's Lloyd Roberts lecture for 1955, delivered on Nov. 30, and published with the society's permission.

reached some mastery of those subjects who do not feel at the same time that the work of the past was only a preliminary to the almost unpredictable developments of the future. Now to live and work in a world of that kind, which by the very terms of its existence is a revolutionary world, must be intensely exciting. And the excitement of those who understand what is going on communicates itself to the general public. You may have guessed already what I am going to hint at, that it does not communicate itself to me. I wish that it did. It is a depressing experience to attend some great ceremonial procession with the crowd waving and cheering madly and to feel cut off from the whole thing, neither able to see the procession nor to share the excitement. It is obvious, indeed, that the great advances in what for want of a better word I will call the scientific sciences are going to modify, even to revolutionise, the conditions under which human life has to be lived. But it is not equally obvious that the alteration of those conditions will alter in any important way the terms of the human dilemma itself. No doubt an expedition will reach the Moon in due course, or some inhabited constituent of the solar system; but suppose none of the inhabitants has ever got further than writing the *Iliad* or *Hamlet* or *King Lear* or *Don Quixote*?

I speak as if the lawyer were the contemplative philosopher of the present day. He is not at all, at any rate in this country. Law is not a reflective calling: it can hardly afford to be, since its essential function lies in the discovery and application of practical rules which have to be treated for the sake of appearances as if they were universals. But all the same there is something rather unusual, something which might be characterised as introverted, about a profession in which the range of learning is, in effect, closed and in which a principle is the more treated as valid the more it can be shown to be ancient and long-established. Such a background should favour a certain conservatism and a certain detachment of outlook. It should favour, too, an almost desperate humanism as the best justification of our, perhaps, dying art. On the whole I think that this is what our background does. But since the lawyer revolutionary is himself a recurrent figure in the historical process, I take it that there is something in the legal discipline which produces by reaction the extreme antithesis of the normal type.

* * *

You cannot be a good lawyer unless you can cultivate good historical sense. The more you try to understand the reason or principle that lies behind any branch of our jurisprudence, the more you are forced to see that it is not Reason in itself but a decent rationalisation of attitudes, moral or social, which belong to the history of our society. When I was a young man I used to get rather embarrassed by this. I used to think that it rather lowered the status of Law and of our learning in it. Now I do not feel quite the same way. It seems to me that the life of man in society is so complex a thing that good social habit which has some root in the past, which is nourished by the emotional association of history, is a more valuable possession for the individual than a mastery of a dialectic which may be intellectually more satisfying. Not all of us in fact know much about history and very few of us know as much as we should: but nevertheless I think it true as a generalisation that to the lawyer the history and the historical development of his country convey a more vivid sense of living and practical reality than they do to others who follow other callings. We are so often forced to see the present in its true light as a point of time in a continuous process which does not itself pause for time. That is a strength: at least it should give a certain richness, at the expense of a certain soberness, of tone.

* * *

Most people think of the lawyer as a great arguer. Argument is, I suppose, the most typical weapon of the lawyer's armoury. How much it governs his real thinking seems to me worthy of some analysis, since it may help to show how ambiguous a word "argument" is. On the one hand, undoubtedly, the administration of law consists in the application of principles to particular combinations of circumstances. The combinations are regarded as new, the principles as given or at any rate as demonstrable by deductive reasoning based upon other principles. Deductive logic therefore plays a large part in the legal process, being employed alike by the advocate to present his argument and by the judge to support his decision. The decision as arrived at is arrived at, accordingly, as a demonstrated necessity: and this use of the logical process, which those trained in it have been taught to regard as infallible, satisfies the general conception of what we need of justice, that it should be certain, impartial, and, above all, impersonal. We can say of the lawyer, then, that he is a person who is conditioned by his training to marshal the expression of his thoughts in the form of logical reasoning.

Away from the Law Courts, this habit does not tend to make the lawyer a good controversialist. His method smacks too much of scholastic debate in the Middle Ages, in which it was essential to success that one contestant should never allow the other to get away for one moment with a single uncertain premise. If he did, there was no breaking the chain of unchallengable deductions that would soon be tied to it. So he cried *At distinguo*, and pulled the other back to the beginning. It was a good discipline for those who can attribute to words precise and definite meanings. But public controversy needs an altogether looser rein. It requires the impressionist technique. What is important is not so much where the other man gets to: what matters more is the significant effect produced by the whole arrangement. And to achieve the effect a few striking passages may be much more compelling than the logical consistency of the whole.

But the interesting thing is that, though all lawyers instinctively resort to deductive reason to demonstrate their conclusions, it is in practice by no means the strongest part of their equipment. A professor of logic would find in even famous judgments some sad howlers—the undistributed middle, transference of meaning in the use of the same word, questions begged until they are in rags. And not only the professor of logic. Ask an intelligent member of the public to make a critical study of some well-known judgment and to give his comments. He would find much to admire—a good, if rather desiccated, style of prose, clarity of exposition, economy of expression and a reassuring air of detachment: but what I do not believe that he would be impressed or convinced by is the reasoning itself. I do not say that he would fault it as the professor might; but I think that his readiness to be satisfied with the result of a trial would arise more from his satisfaction with the judge himself, the conduct of the proceedings, and the treatment of the witnesses, than from any feeling that the considerations which were ultimately held to be the determining ones were based upon the kind of reasoning that he would himself be convinced by in the critical decisions of his own life. In particular, the distinctions upon which the result seems to turn often present themselves as somewhat unreal, not so much as points of substance as fine points of verbal distinction.

Now most lawyers would find an answer to this kind of criticism, although they are not very ready to offer it. If it was offered more often and more explicitly it would help to a better general understanding of what is the true structure of legal reasoning and might mitigate the impression, quite widespread, that law must seem much more convincing to lawyers than it does to the outside

world. The thing to be admitted is that Law is not in any sense an exact science, indeed it is not in the modern sense of the word a science at all. Its material consists of the conduct and the affairs of living human beings in all the complexity of their relations, and its art consists in the application of certain generalisations, styled principles, to a particular combination of circumstances. These generalisations are themselves half moral, half practical: in each case the compound is produced more by perception than by rule. It is a mistake to suppose that logic based on verbal propositions can ever be much of a guide for this purpose, and I have the impression that lawyers more or less unconsciously accept that their formal process is not their real one. The real process, the mastery of which constitutes the abiding fascination of administering law, proceeds by the method of selection and arrangement. Once the picture has been composed by the artist there is indeed something inevitable in the resulting impression but, of course, the art has lain in the justness of the selection and the firm outline of the pattern.

* * *

Perhaps you will allow me to illustrate what I am saying by an extract taken from a well-known judgment in the House of Lords by one of the greatest exponents of the legal art that this country has known. The speaker is Lord Macnaghten; the period 1888; the setting a late-Victorian, foggy, lamplit Christmas Eve at Paddington; the subject a Gladstone bag lost at the station by a certain Mrs. Bunch. Mrs. Bunch is now at grapples with the Great Western Railway as to which of them is to bear the burden of the loss. This is how Lord Macnaghten deals with the problem:

"Your Lordships are familiar with the evidence in this case, and I do not propose to repeat it. It is enough to say that on the 24th of December 1884, at 4.20 p.m. Mrs. Bunch came to Paddington with a Gladstone bag and some other luggage, meaning to travel with her husband by the 5 p.m. train to Bath, that on her arrival at the station her luggage was received by a porter in the employment of the company, and taken by him to the platform for the purpose of the journey, and that the Gladstone bag was last seen on the platform with the same porter a few minutes afterwards. From that time all trace of the bag is lost. The porter and the bag both vanish from the scene. It was suggested by the learned counsel for the appellants, by way of explanation, that the porter was possibly one of a number of men picked up by the company for the day to meet the pressure of Christmas traffic. But I may observe, in passing, that so far as the public was concerned, there was apparently nothing to distinguish the casual helper of whom little, if anything, was known, from the regular and trusted servants of the company.

"On these bare facts standing alone it seems to me that there would be evidence upon which the County Court judge might reasonably find for the plaintiff, even if the company were not under the liability of common carriers as regard the lost bag.

"But then it was contended with much earnestness that it ought to have been inferred from the circumstances of the case and from Mrs. Bunch's conduct that at the time of the loss the bag was not in the custody of the company for the purpose of the journey. It was said that Mrs. Bunch came to the station too soon—that she came before the train was drawn up—that she broke the journey, if the journey is to be taken as having begun—and left the bag in the charge of a porter who was then not acting as the servant of the company within the scope of his authority as such, but acting as her agent in his individual capacity, and that if this was not what she meant, it was an attempt on her part to saddle the company with a liability which they were not bound to undertake.

"It seems to me that there is no substance in any of these objections. Mrs. Bunch, no doubt, came to the station somewhat early. But the one thing that railway companies try to impress on the public is to come in good time. And considering the crowd likely to be attracted by cheap fares during the Christmas holidays, and the special bustle and throng on Christmas Eve, it does not seem to me that Mrs. Bunch came so unreasonably early as to relieve the company who received the luggage from the ordinary obligations flowing from that receipt. It is impossible to define within the extreme limits on both sides the proper time for arrival. Everything must depend upon the circumstances of the particular case. But, among those circumstances, the least important, as it seems to me, is the time when the train is drawn up at the departure platform. That is, as everybody knows, a very variable time. And it is a matter over which the passenger has no control, and of which he can have no notice before he comes to the station.

"Then I think that there is nothing in the conversation which took place between Mrs. Bunch and the porter. Mrs. Bunch's question was a very natural one. The answer which she received was just what might have been expected. Nine women out of ten parting with a travelling bag on which they set any store would have asked the same question. In ninety-nine times out of a hundred the same answer would be returned. I do not think that this conversation altered the relation between the parties in the least degree. It seems to me almost absurd to treat it as a solemn negotiation by which the lady abdicated such rights as she possessed against the Great Western Railway Company and constituted this ephemeral and evanescent porter in his individual capacity the sole custodian of her Gladstone bag.

"Nor can it, I think, be said that Mrs. Bunch broke the journey by leaving the platform to meet her husband and get her ticket. To take a ticket is a necessary incident of a railway journey. It is, at least, a very common incident in railway travelling for persons, who intend to travel in company, whether they be members of the same family or not, to meet by appointment in the railway station from which they mean to start, and it is certainly not unusual in such a case for the purchase of tickets to be deferred until the meeting takes place . . ."

"It was said that if everybody acted as Mrs. Bunch acted in this case, railway companies would require an army of porters, and that it would be almost impossible for them to carry on their business. I quite agree, but I am not much impressed by that observation. I apprehend that if all travellers acted precisely alike, if everybody arrived at a station for a particular journey at precisely the same moment, though the time of arrival were the fittest that could be imagined, there would be no little confusion, and perhaps some consternation among the railway officials. Whatever may be the result of your Lordship's judgment, there is no fear that it will have the effect of making everybody act alike. Things will go on just as usual. The fidgety and the nervous will still come too soon; the unready and the unpunctual will still put off their chance of arrival till the last moment, and the prudent may have their calculations upset by the many accidents and hindrances that may be met with on the way to the station. And it is just because of the irregularity of individuals that the stream of traffic is regular and easily managed."

Now there are several things that might be said by way of commentary on this specimen of judicial reasoning. I would like to draw your attention to one or two of them. First, though this may seem merely an incidental comment, the style is very nicely fitted to the subject. It is grave, without being portentous; it is admirably detailed, without being finicky; and at the same time there is, I think, at the back of it a gleam of decorous amusement that these sober legal propositions have to be marshalled and weighed to solve the problem of Mrs. Bunch and her Gladstone bag. Next, these paragraphs which seem to be no more than a recital of facts, or a rather quizzical glance at certain arguments, do in fact contain an exposition of legal principles—so much so that Mrs. Bunch's case has become a leading case determining for good the kind of considerations that are to govern the loss of Gladstone and other bags at railway stations and the weight to be given to some of those considerations. But the legal principles are, as it were, built into the factual structure of the story itself, not imposed upon

it, so that the story seems to arrange itself naturally round them and to take its form and order from their intrinsic logic. (This quality of design is a quality common to all great artists, in whatever medium they work. They speak as one having authority, not as one bound by other men's measure. They do not labour at odds with their material. A master of his art is a master of his means and under his hands formless mass glows to clear outline and coherent shape.) And, lastly, the whole passage, though the careful simplicity of it is to some extent delusive, is irradiated by a vivid common sense, the most difficult of all qualities for the lawyer to incorporate into his work.

I do not mean to level that as a cheap generalisation. It is quite true that in every calling which is primarily intellectual it is easy to reason oneself away from common sense. The Law is not singular in that respect, though its immediate application to the practical affairs of living throws its defects into the sharper relief. But common sense is not itself the highest of human qualities nor is it the final arbiter in our affairs. The lawyer's problem is not understood unless it is understood as a problem, never completely resolved, of keeping his conclusions sufficiently related to common sense without subordinating them to it. Perhaps I could describe his process as away from common sense by way of reason and then back to common sense to test the conclusion. And his difficulty is enlarged by the fact that the Law, for all its portentousness, for all that it must affect to deal with the issues of life and death, of honour and dishonour, of fortune and ruin, is condemned to make its survey over a limited field which covers always much less than the whole subject. *This* consideration is admissible, *that* is excluded. For *this* purpose the Court may learn of a man's motive, for *that* purpose it is to be treated as irrelevant. The human heart may be the prime mover in most of the combinations of events that come before a court of law's review, but only a very limited acknowledgment can be permitted either of its existence or of its impulses. There would be little worth honouring in the Law if it could not relate its judgments to a sense of morals, and yet we know that a court of law is not, and is not free to be, a court of ethics in itself.

I do not criticise the ambiguity of attitude that is forced upon us by these limitations. Nor, I think, do most lawyers. No-one could practise law without realising that some such limitation is unavoidable. It is not the purpose of this lecture to rehearse the reasons. Every case has to be seen as one step only in the process of administering justice, and administration creates its own necessities—of time, of good order, of what is in the true sense triable and what is not. Law is essentially a generalisation—how can it provide even-handed justice if it is not ?—and the rules and principles which we apply are the product of those generalisations. So, although we must dispute as to the application of the rules and as to the qualifications upon them that ought to be recognised, I think that we are conditioned to acceptance of the idea that in the Law we practise an imperfect art, and that the judgments which we pass, however profoundly meditated, are valid only within the terms which we ourselves impose upon the insoluble complexity of life.

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It is not easy to explain this attitude to the lay world, since it is the lawyer's mystery.

Ostensibly, the Law is portentous in its claims. But I do not think that any lawyer who is either sensitive or sensible feels that he is portentous in himself, despite the terms of expression which his subject almost forces upon him. Among the several forms of legal humour, much of it esoteric, you can sometimes notice a rather grim anger at the ambiguity of a position in which by the very condition of his calling the lawyer is prohibited from speaking, though he cannot be prevented from feeling. Often such expressions pass for a merely macabre or even ghoulish brand of humour, of a kind that professions do indeed generate. Sometimes they are; but so to write them off is, I think, to miss a quality of feeling that has always seemed to me an important part of the make-up of a lawyer. Let me try to make good an instance or two of this kind of irony.

There is a record of an 18th-century judge on assize at Stafford, who sentenced a man to death, as law then required, for uttering a forged bank-note. He charged him to prepare himself to leave this world for another where, said the judge, it was to be hoped that "through the merits and mediation of our blessed Redeemer he would experience that mercy which a due regard for the credit of the paper currency of this nation forbade him to hope for here." Of course, you may take that in more ways than one: the bland 18th-century philosophy of the Powers-that-Be; a small, macabre, private joke; or, as I think, a sudden, Swiftian flash at man's unending inhumanity to man.

Max Beerbohm attended Sir Charles Russell's famous cross-examination of the forger Pigott during the sitting of the Parnell Commission. There were the three Lords Justice, as aweful as only Victorian judges, perhaps, could be: there was the pitiable Pigott, who was to kill himself a few days later, mumbling and stumbling in his exposure: and there was Sir Charles Russell, the most overwhelming man of his period, addressing him "Come, Mr. Pigott, strive to do yourself justice. Remember you are face to face with my Lords!" Portentousness ? mumbo-jumbo ?—or one brief commentary on the whole judicial scene ?

Few lawyers can be quite easy in the reflection that the rights of a litigant who can afford to spend money on the presentation of his case are more readily safeguarded than the rights of one who cannot. "The gates of the Courts of Justice are open to rich and poor alike"; one judge has said, "so are the doors of the Ritz Hotel." The comment in different dress is much older than the Ritz: but I doubt if it will ever be repeated just as a joke.

On one occasion, which has now passed into history, a few sentences on the same theme are said to have done much to bring about a major change in the law of the country. Up to the middle of the last century there were no divorce courts: marriage could be dissolved at law by one process only, the obtaining of a special Act of Parliament. Few people had time, influence, or money enough to resort to this: other persons whose marriages went astray and who desired a second union had the choice between the crime of bigamy and the scandal of open adultery. In 1845 a labourer was prosecuted at Warwick Assizes on a charge of bigamy to which he pleaded guilty. The judge, Mr. Justice Maule, sentenced him in these words:

"Prisoner at the bar, you have been convicted of the offence of bigamy, that is to say, of marrying a woman while you had a wife still alive—though it is true that she has deserted you and is living in adultery with another man. You have therefore committed a crime against the laws of your country, and you have also acted under a very serious misapprehension of the course which you ought to have pursued. You should have gone to the ecclesiastical court and there obtained against your wife a divorce *a mensa et thoro*. You should then have brought an action in the courts of common law and recovered, as no doubt you would have recovered, damages against your wife's paramour. Armed with these decrees you should have approached the legislature and obtained an Act of Parliament which would have rendered you free and legally competent to marry the person whom you have taken on yourself to marry with no such sanction. It is quite true that these proceedings would have cost you many hundreds of pounds, whereas you probably have not as many pence. But the Law knows no distinction between rich and poor. The

sentence of the Court upon you, therefore, is that you be imprisoned for one day, which period has already been exceeded, as you have been in custody since the commencement of the assizes."

The prisoner was released. Only a few years later the requirement of an Act of Parliament to dissolve marriage was abolished and our modern divorce court was set up under which divorce is obtained by judicial process.

* * *

I have the feeling that the lawyer's processes of thought, as I have presented them to you, are such as to make him rather a figure on the side-lines of the game as it is played today. But then Law itself, his native art, is coming to stand rather on the side-lines of modern civilisation. His status is still a high one, but this eminence he owes in part to the very great value that was placed upon his calling in the earlier forms of our own society. He enjoys therefore an inherited prestige which is out of proportion to the current evaluation of the services which Law can render. The reason, I believe, lies in that change of attitude which is at once the cause and the consequence of the present age. There is not really much to be said for Law unless it is thought of as representing absolute standards of right and wrong, even at a far remove. But then that means that its fundamental rules, whatever they are, stand above and independent of social needs and aspirations of the day. The function of the lawyer, you might say, is to reconcile the demands of human nature to the acceptance of those rules. There are periods of historical development when men prize very highly such a service of reconciliation. I do not think that this is one of those periods. The vast possibilities of material change and advance have made men haughty to their institutions. Their institutions must serve them, absolutely, and they will not in any way serve their institutions. So be it: but a lawyer remains, first and last, an institutionalist, and the lawyer, his equipment a little rusty, his habit a little worn, not quite the tremendous figure of the past, stands compactly on one side, content to wait his turn.

DIETETIC TREATMENT OF PEPTIC ULCER

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FOR over a century the principal treatment of peptic ulcer has consisted in the restriction of the diet to "bland" foods. At one time a preliminary period of starvation was recommended (Leube 1876, Riegel 1903); but it has been more usual to start treatment with a diet of milk, eggs, and perhaps cream, and subsequently to add other soft and "non-irritating" foods (Lenharz 1904, Sippy 1915, Hurst and Stewart 1929). Under the influence of Meulengracht (1934) the use of very limited diets has largely been abandoned, but most patients are still provided with a long list of foodstuffs which they are advised to avoid.

The value of a special diet has never been demonstrated by a controlled series of observations, and it must be presumed that its use is continued partly for reasons of tradition, partly on the theoretical grounds (ill supported in practice) that "bland" foods stimulate less secretion than other foods and do not "irritate" the ulcer physically, and partly because patients given a restricted diet tend to lose their pain. It is, however, now realised that the bouts of pain associated with the presence of an ulcer are nearly always self-limiting and it is widely held that the duration of the bouts can be influenced by psychological means. Several workers have, therefore, questioned whether dieting has any specific effect. Nicol (1942) and Lawrence (1952) compared the results obtained by giving patients a full diet with those obtained by a standard ulcer régime, and neither found that the standard régime had any advantage.

The present investigation was planned to be a controlled trial of certain types of special dieting. In the first part of the investigation a comparison was made between the rate of healing of gastric ulcers in patients treated in hospital by two different diets; in the second, the frequency with which symptoms recurred and the ulcer remained unhealed was compared in two series of out-patients with gastric or duodenal ulcers who were recommended to adhere to different dietetic schedules.

Inpatients with Gastric Ulcers

The inpatient trial was part of a long-term investigation into factors affecting the rate of healing of gastric ulcers. The type of patients admitted for treatment and the general plan of the investigation have been described in detail elsewhere (Doll and Pygott 1952, 1954, Doll et al. 1956).

In order to obtain more information in a limited period, the effects of three different types of treatment have been assessed concurrently. The different treatments have been allocated to patients in such a way that the group of patients who have been given a specific treatment and the group not given it have each contained the same proportion of patients given each of the other treatments; hence, the value of each treatment can be assessed independently. In the present trial the contrasted methods of treatment were: (1) a standard ulcer diet, and an almost normal ward diet; (2) continuous intragastric milk drip, and no drip; and (3) advice to smokers to stop smoking, and allowing them to continue smoking.

With milk drip pain appeared to be relieved somewhat more quickly than without it, but no effect could be detected on the rate of healing of the ulcers (Doll et al. 1956). Insufficient patients have yet been advised to stop smoking for assessment of the value of this advice; no interaction has been observed between the advice and either of the two diets, and it is thought that any effect which may be attributable to it can be ignored in assessing the value of the diets.

TABLE I—COMPARABILITY OF PATIENTS ON ADMISSION WITH REGARD TO PRESENCE OF PAIN, BODY-WEIGHT, AND SIZE OF ULCER

Characteristics	No. of patients on: Standard ulcer diet	Almost normal diet
Pain on admission:		
Present	21	24
Absent	11	8
Initial weight:		
Under 7 st.	2	3
7 st.–	8	7
8 st.–	8	7
9 st.–	2	4
10 st.–	8	3
11 st.+	4	5
Not recorded	0	3
Av. all patients (st., lb., oz.)	9, 0, 7	8, 13, 12
Initial size of ulcer niche (sq. mm.):		
10–24	9	8
25–49	9	7
50–99	7	7
100+	7	10

TABLE II—INPATIENTS GIVEN STANDARD ULCER AND ALMOST NORMAL DIETS: CHANGE IN SIZE OF ULCER IN 1 MONTH

Diet	No. of patients	No. of patients in whom niche was:				Av. amount healed (%)
		Healed	Two-thirds or more healed	Less than two-thirds healed	Larger	
Standard ulcer	32	5	15	11	1	65·1
Almost normal	32	10	11	10	1	70·3

The ulcer diets used had been standard in the department for several years. The contrasting diet was the normal hospital diet with the elimination of fried food; it included snacks at 10 A.M. and 9 P.M. The diets are described in the appendix.

Initial Comparability of the Patients

In the absence of certain knowledge of the clinical features which affect prognosis (Doll and Pygott 1954), the only precautions taken to ensure that the patients given the different treatments were comparable before treatment was started were: (1) the exclusion from the trial of patients who had been treated previously and (2) the allocation of the specific methods of treatment for each patient at random. The results of treatment have been assessed by recording the change in size of the radiographic ulcer niche, the change in the patient's weight, and the duration of the patient's symptoms. The initial comparability of the patients in the two treatment groups with respect to the characteristics immediately relevant to these measures is shown in table I. In all these characteristics—i.e., the initial size of the ulcer niche, the initial weight of the patient, and the presence of symptoms on admission—the two treatment groups were closely similar.

Results

The results are shown in tables II–IV. From table II it is seen that more of the ulcers were completely healed in 1 month among the patients on the "almost normal" diet than among the patients on the standard ulcer diet (10/32 compared with 5/32). The difference is not statistically significant ($\chi^2=2{\cdot}18$, $n=1$, $P>0{\cdot}1$) and since more of the ulcers among the patients on the ulcer diet were nearly healed there was little apparent advantage to the control group in the average amount healed for all patients (70·3%, compared with 65·1%).

Gain in weight was, on the average, also somewhat greater among the patients on the fuller diet. Since half the patients in each group received a course of intragastric milk drip and this has been shown to affect the amount of weight gained (Doll et al. 1956), the results in table III are shown separately for patients given milk drip and patients not given it. From this table it is seen that the average gain in weight was practically the same in the two treatment groups so long as milk drip was given, but that among patients not given drip those given the fuller diet gained almost twice as much weight as those given the ulcer diet (5 lb. 8 oz., compared with 2 lb. 14 oz.). The number of patients so treated was small but, despite this, the difference was large enough to be statistically significant ($t=2{\cdot}52$, $n=29$, $P=0{\cdot}02$).

TABLE III—INPATIENTS GIVEN STANDARD ULCER AND ALMOST NORMAL DIETS: CHANGE IN WEIGHT IN 1 MONTH

Treatment	No. of patients	No. of patients losing weight	No. of patients gaining:			Av. weights gained	
			0 lb.–	5 lb.–	10 lb. +	lb.	oz.
On milk drip:							
Standard ulcer diet	16	0	0	11	5	8	6
Almost normal diet	14*	0	2	6	6	8	7
Not on drip:							
Standard ulcer diet	16	4	5	7	0	2	14
Almost normal diet	15†	0	5	10	0	5	8
All patients:							
Standard ulcer diet	32	4	5	18	5	5	8
Almost normal diet	29	0	7	16	6	6	15

* Data not recorded for 2 patients.
† Data not recorded for 1 patient.

In contrast to the results obtained by these objective measures, the results obtained by assessment of the patient's symptoms showed an advantage for the ulcer diet (table IV). The number completely free of pain throughout treatment was more (17/32, compared with 9/32) and the difference is statistically significant ($\chi^2=4{\cdot}14$, $n=1$, $P=0{\cdot}04$). Since milk drip possibly alleviates pain (Doll et al. 1956), the data in table IV are shown separately for those given milk drip and for those not given it. In both subgroups, patients on the standard ulcer diet complained of pain less than the patients on the "almost normal" diet.

TABLE IV—INPATIENTS GIVEN STANDARD ULCER AND ALMOST NORMAL DIETS: SYMPTOMS DURING MONTH'S TREATMENT

Treatment	No. of patients	No. of patients:		
		Pain-free	With occasional pain	With daily pain for one week or longer
On milk drip:				
Standard ulcer diet	16	10	6	0
Almost normal diet	16	6	7	3
Not on drip:				
Standard ulcer diet	16	7	6	3
Almost normal diet	16	3	9	4
All patients:				
Standard ulcer diet	32	17	12	3
Almost normal diet	32	9	16	7

Outpatients with Gastric or Duodenal Ulcers

Under the conditions of outpatient treatment it is not possible to be sure that patients adhere to the recommended diets; and it may certainly be doubted whether more than a small proportion adhere to them strictly over a long period. In these circumstances it is hardly possible to assess the real value of a diet for outpatients. On the other hand, the value of giving the advice to diet can readily be assessed; and this is of considerable practical importance, although it may have little interest from the point of view of pathogenesis.

The present investigation was carried out with the coöperation of 80 patients who had completed a course of inpatient or outpatient medical treatment for a radiographically proven gastric ulcer, and of 50 patients who had completed a course of outpatient treatment for radiographically proven duodenal ulcer. At the beginning of treatment all patients were pain-free, but in 48 of the patients with gastric ulcer and 39 of the patients with duodenal ulcer the ulcer craters were still demonstrable radiographically.

The patients were divided into two groups at random. Those in one group were advised to continue with the standard ulcer diet on which they had completed their course of treatment (see appendix); those in the other group were advised to revert to a normal diet. Patients were admitted to the gastric-ulcer series until there were 40 or more in each group; the last few in the larger group were omitted from the follow-up, so that each of the groups actually studied contained 40 patients. Both groups of patients

TABLE V—OUTPATIENTS ON STANDARD ULCER AND NORMAL DIETS: RESULTS ASSESSED RADIOGRAPHICALLY AFTER 1 YEAR

Site of ulcer	Diet	No. of patients showing ulcer radiographically:		No. in whom treatment failed	No. examined after 1 yr.
		Absent	Present		
Stomach	Standard ulcer	15	13	9	37
	Normal ..	22	12	3	37
Duodenum	Standard ulcer	11	10	0	21
	Normal ..	10	14	2	26
Stomach or duodenum	Standard ulcer	26 (45%)	23 (40%)	9 (16%)	58 (101%)
	Normal ..	32 (51%)	26 (41%)	5 (8%)	63 (100%)

with gastric ulcer contained an equal proportion in which the ulcer was still demonstrable (24/40): in the duodenal-ulcer series the crater was still demonstrable in 22 out of the 27 who were recommended to adhere to the convalescent diet (81%) and 17 out of the 23 who were recommended to revert to a normal diet (74%).

In addition to dietetic advice, all patients were given supplies of an alkaline powder (equal parts of magnesium and calcium tribasic phosphate) to take in 1-drachm doses as necessary to relieve pain; if they had been employed previously, they were advised to continue at work. Patients were seen at hospital every 3 months, or more often if required by their clinical condition, and the symptoms since their last attendance were recorded. At the end of one year a further barium-meal examination was carried out and the investigation was concluded.

Results

The investigation was completed as planned for 121 out of the 130 patients, save that a few did not attend regularly and a few of the final barium-meal examinations were delayed for several months. It may be presumed that such patients were more likely to attend when symptoms were present, and the final proportion of positive barium-meal examinations may, therefore, be somewhat inflated. Of the 9 patients for whom the planned investigation was not completed, 4 failed to attend for the final examination (2 with duodenal ulcers on the ulcer diet, 1 with a duodenal ulcer on normal diet, and 1 with a gastric ulcer on the ulcer diet), 3 attended for the final clinical examination but not for the radiographic examination (all with gastric ulcers and on normal diet), 1 died of bronchial carcinoma (a man with a gastric ulcer on the ulcer diet) and 1 proved to have a malignant and not a benign gastric ulcer (recommended to take the ulcer diet).

Treatment was considered to have failed in 14 patients who required to be admitted to hospital for pain or hæmorrhage. 8 patients on the ulcer diet were admitted because of the severity of their pain (all with gastric ulcers), and 1 (also with a gastric ulcer) was admitted for hæmorrhage; 3 patients on normal diet were admitted because of the severity of their pain (all with gastric ulcers) and 2 (with duodenal ulcers) were admitted for hæmorrhage.

TABLE VI—OUTPATIENTS ON STANDARD ULCER AND NORMAL DIETS: RESULTS ASSESSED SYMPTOMATICALLY OVER 1 YEAR

Site of ulcer	Diet	No. of patients recording:			No. in whom treatment failed	No. examined after 1 yr.
		No symptoms throughout	Occasional pain or other dyspepsia	Daily pain for at least 1 wk.		
Stomach	Standard ulcer	10	8	10	9	37
	Normal ..	11	12	14	3	40
Duodenum	Standard ulcer	3	5	13	0	21
	Normal ..	3	12	9	2	26
Stomach or duodenum	Standard ulcer	13 (22%)	13 (22%)	23 (40%)	9 (16%)	58 (100%)
	Normal ..	14 (21%)	24 (36%)	23 (35%)	5 (8%)	66 (100%)

The results are shown in tables V and VI. Treatment failed in rather more of the patients on the ulcer diet than on the normal diet (16%, compared with 8%); but correspondingly fewer of the patients who completed the course of treatment with the ulcer diet suffered from symptoms. The proportions of patients in whom the ulcer was found to be healed and the proportions who were pain-free throughout were closely similar in the two treatment groups (ulcer healed 45% and 51%, pain-free 22% and 21%). Among the patients with gastric ulcer rather more of the ulcers healed on a normal diet than on the ulcer diet, but the converse was true among the patients with duodenal ulcer; both differences were small and may be due to chance.

Discussion

The present results clearly indicate that the rate of healing of a gastric ulcer is not materially affected by limiting the diet to "bland" foods. Ulcers did not heal any more readily among outpatients advised to adhere to a "bland" diet, nor among inpatients whose diets were strictly supervised. In fact, the proportion of ulcers which healed during a month's inpatient treatment and the average amount healed were somewhat greater in those treated with the almost normal diet than in the corresponding patients treated with the "bland" diet, and were also greater than in other groups of inpatients treated with "bland" diets in other comparable series reported previously from the same department (table VII).

TABLE VII—EXTENT OF HEALING OF GASTRIC ULCERS REPORTED IN VARIOUS STUDIES

No. of patients	Treatment	Proportion of patients with ulcer completely healed (%)	Av. amount healed (% of initial size of ulcer)
32	Almost normal diet*	31	70·3
32	Standard bland diet* (present investigation)	16	65·1
40	Standard bland diet (Doll et al. 1956)	23	50·7
31	Standard bland diet (Doll and Pygott 1952)†	16	62·8
40	Standard bland diet plus milk drip (Doll et al. 1956)	25	69·7

* Half the patients in each group also given milk drip.
† Excluding 1 patient with an ulcer niche initially less than 10 sq. mm. in profile.

No difference was observed in the symptoms recorded by outpatients recommended to take a "bland" diet and those advised to revert to a normal diet, but a difference was observed among inpatients. Patients given the standard ulcer diet complained of pain with about the same frequency as similarly treated patients in previous investigations, but patients given the "almost normal" diet complained of it more often (table VIII).

The symptoms complained of by inpatients were mostly slight, and an impression was obtained that they occurred particularly after certain items of food (for example, sardines, kippers, and apples). As confidence in the new diet increased, discomfort tended to disappear, and possibly the increased incidence of minor symptoms among inpatients on the "almost normal" diet was psychological in origin.

TABLE VIII—RELIEF OF SYMPTOMS DURING INPATIENT TREATMENT FOR GASTRIC ULCER REPORTED IN VARIOUS STUDIES

No. of patients	Treatment	Proportion pain-free (%)	Proportion with occasional pain or dyspepsia (%)	Proportion with daily pain for 1 wk. or longer (%)
16	Almost normal diet*	19	56	25
16	Standard bland diet (present investigation)*	44	38	19
40	Standard bland diet (Doll et al. 1956)*	38	40	23
31	Standard bland diet (Doll and Pygott 1952)†	42	29	29

* Excluding patients treated with milk drip.
† Excluding 1 patient with an ulcer niche initially less than 10 sq. mm. in profile.

One other controlled trial of dietetic treatment has been reported.

Lawrence (1952) treated 140 inpatients with gastric, duodenal, or jejunal ulcers by a modified Lenharz régime or by a "full convalescent" diet including "fried foods, cheese and pork pies" and without sieving or special preparation of vegetables or fruit. Alternate patients received one régime; the remainder the other. All patients were given the same drugs and (with certain exceptions equally distributed in the two treatment groups) were kept in bed until the ulcer was radiographically healed. Healing of the ulcer was obtained in 93% of patients on both treatments, in average times of 58 days for those on the full diet and 64 days for those on the Lenharz diet. Pain was abolished in 94% of patients on both treatments, in average times of 25 and 26 days respectively. Lawrence noted that some patients on the full diet "were at first dubious of a régime so much at variance with their earlier instructions but their anxiety was allayed when it was explained to them that such food was required to inactivate their over-potent gastric juice."

These results should not be interpreted as signifying that the pathogenesis of peptic ulcer is entirely unrelated to diet. But specifically harmful or curative factors—if they exist—do not appear to have yet been adequately identified. So far as the healing of ulcers is concerned, it may be concluded that there is no advantage to be gained from limiting the diet to "bland" foods—that is, not in the way that diet is commonly limited in hospital. Even fried foods, which were excluded from both types of diet given to inpatients in the present investigation, were not harmful in Lawrence's study, and no harm could be demonstrated from allowing their use to outpatients in the present study.

In both investigations inpatients on the standard ulcer diets had 2-hourly feeds, and patients on the more normal diets had snacks on waking, at mid-morning, and at bedtime. While, therefore, patients on the more normal diets had two less feeds a day than the patients on the ulcer diets, they did not have as long intervals between food as many people have. It may be concluded that strict 2-hourly feeds have no greater beneficial effect on the rate of healing of gastric ulcers than feeds at the longer intervals adopted for the control diets, but no evidence has been obtained about the value of snacks between meals.

Whether "bland" foods and 2-hourly feeds were of value for the relief of pain is uncertain. The small difference observed in part of the present investigation might have disappeared if a stronger attempt had been made to convince the patients that the unaccustomed diet was harmless.

Summary

The value of the dietetic treatment of peptic ulcer by means of "bland" foods has been assessed on: (1) 64 inpatients with gastric ulcers, and on (2) 80 outpatients with gastric ulcers and 50 outpatients with duodenal ulcers.

The inpatients were divided into two equal groups; patients in one group were given the standard hospital ulcer diet, while in the other they were given an almost normal diet. The diets were strictly supervised throughout.

The results showed a slight but statistically insignificant advantage to the patients on the "almost normal" diet with regard to the proportion in whom the ulcers became completely healed (10/32, compared with 5/32) and the average amount healed for the whole group (70·3%, compared with 65·1%), and (if patients on milk drip are omitted) a significant advantage in the average amount of weight gained (5 lb. 8 oz., compared with 2 lb. 14 oz.); on the other hand, they showed an appreciable advantage to the patients on the standard ulcer diet with regard to the proportion who reported themselves completely free of pain throughout treatment (17/32, compared with 9/32).

The outpatients were either advised to continue for a year on the standard ulcer diet with which they had previously been treated, or were advised to revert to a wholly normal diet. At the end of a year the proportion who had remained free of pain and in whom the ulcer was radiographically healed was practically the same in the two groups (pain-free 22% and 21%, ulcer healed 45% and 51%).

Dieting with "bland" foods does not increase the rate of healing of peptic ulcers.

We are grateful to Dr. F. Avery Jones and Dr. T. D. Kellock for referring patients to us for treatment, and to the dietitians and other members of the staff of the gastro-enterological and radiological departments of the hospital for their assistance in the care and investigation of the patients.

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Appendix

Inpatients on the standard ulcer régime were given the basic diet for the first 2 weeks of treatment and the convalescent diet for the subsequent two weeks.

Basic diet: Two-hourly feeds from 6 A.M. to 10 P.M.

6 A.M. (if awake): teacupful of warm milk.
8 A.M.: one helping of fine oatmeal porridge made with milk; cornflakes and milk; egg, lightly boiled, poached, scrambled, or as omelette. Bread-and-butter with jelly marmalade, honey, or syrup. Teacupful milk flavoured with weak tea.
10 A.M.: teacupful milk flavoured with 'Ovaltine,' 'Horlicks, or 'Milo.' Plain biscuits or rusks.
NOON: one helping of egg or cheese dish; fresh fish, tripe, brains, or chicken. Mashed potatoes, sieved vegetable.
2 P.M.: one helping of milk pudding, ice-cream, light sponge-pudding, or jelly.
4 P.M.: teacupful milk flavoured with weak tea. Bread-and-butter with jelly, jam, honey, or syrup. Sponge-cake or plain biscuits.
6 P.M.: one helping of vegetable soup (made with milk), egg or cheese dish, fresh fish, tripe, brains, or chicken. Bread and butter.
8 P.M.: as at 2 P.M.
10 P.M.: as at 10 A.M.

Convalescent diet: Two-hourly feeds from 6 A.M. to 10 P.M.

6 A.M., 10 A.M., and 10 P.M.: feeds as in basic diet.
8 A.M.: one helping of fine oatmeal porridge and milk; cornflakes and milk; egg, boiled, poached, scrambled, or as omelette; grilled bacon; soft roes or fishcake. Bread-and-butter with jelly marmalade, honey, or syrup. Weak, freshly made tea with teacupful of milk.
NOON: one helping of egg or cheese dish; fresh fish, tripe, brains, chicken, rabbit, ham, lamb, or mutton (minced if tough). Mashed potato. Sieved vegetable.
2 P.M.: one helping of milk pudding, ice-cream, light sponge-pudding, or sieved fruit.
4 P.M.: weak, freshly made tea with teacupful milk. Bread-and-butter with jelly, jam, honey, or syrup. Sponge-cake or plain biscuits.

6 P.M.: first course as at midday.
8 P.M.: as at 2 P.M.

Inpatients on the almost normal diet were given the same diet throughout.

Almost normal diet

6 A.M. (if awake): tea with milk and sugar as desired.
8 A.M.: one helping of egg, boiled, poached, or scrambled; grilled bacon or fish. Bread-and-butter with marmalade. Tea with milk and sugar as desired.
10 A.M.: milk drink, flavoured as desired, or 'Bovril.' Biscuits.
NOON: One helping of any fish, offal, chicken, or any meat. Potato, mashed or boiled. Green or root vegetables or salad. Milk or sponge pudding, ice-cream, jelly, or fruit.
3.30 P.M.: bread-and-butter with any jam, honey, or lemon curd. Cake or biscuits. Tea with milk and sugar as desired.
6 P.M.: one helping of cheese or egg dish, fish, or any meat. Green or root vegetables or salad (or helping of soup; cheese and biscuits). Bread and butter. Sweet as at noon.
9 P.M.: as at 10 A.M.

Fried foods were excluded from all three diets.

Outpatients advised to adhere to a gastric diet were given the convalescent schedule described above, save that the 2 P.M. and 8 P.M. feeds were combined with the midday and evening meals and the 4 P.M. and 10 P.M. feeds were brought forward $^1/_2$–1 hour.

THE INEFFECTIVENESS OF SPLINTING IN THE TREATMENT OF ABDUCTOR PARALYSIS AT THE SHOULDER

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FOR many years the application of an abduction splint has been a part of the accepted treatment of abductor paralysis at the shoulder (Jones and Lovett 1929).

The principle aims of splinting are as follows:

(1) To relax the deltoid muscle and thereby to encourage its recovery.
(2) To prevent the development of laxity in the capsule and ligaments of the shoulder-joint.
(3) To prevent adduction contracture.
(4) To prevent scoliosis.
(5) To prevent or treat œdema of the upper limb.
(6) To assist the patient in the performance of certain actions, such as feeding himself.

We assess here the value of splinting, in relation to these aims, in the treatment of abductor paralysis caused at the shoulder by poliomyelitis.

Material and Method

This study is based on all the adequately documented records of patients with poliomyelitis seen between 1946 and 1953 by one of two observers, Mr. D. M. Brooks and one of us (W. J. W. S.). The records contained complete muscle charts, and paresis or paralysis of one deltoid muscle or of both was detected by clinical examination six weeks after the onset of paralysis. This group comprised 129 patients with both deltoids affected, and 101 with one deltoid affected, making 230 patients and 359 affected muscles. The two observers used the same technique of assessment of muscle power throughout. Records were made of the following items:

(1) The power of the deltoid muscle and of other muscles of the shoulder and upper arm six weeks after the onset of the paralysis and on a second occasion at least eighteen months later. The Medical Research Council (1942) scale of muscle grading was used. We were particularly careful, in our assessment of the deltoid muscle, to observe that the movement produced was true scapulo-humeral movement and that the deltoid muscle was producing it. Up to 60° of abduction can be produced by scapular rotation alone, and true abduction at the scapulo-humeral joint can occasionally be produced by the supraspinatus muscle in the presence of complete paralysis of the deltoid muscle.

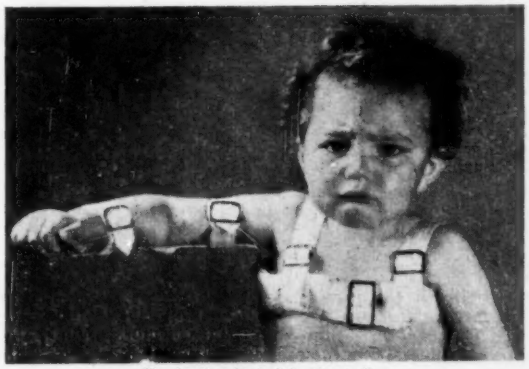

Fig. 1—Standard abduction splint.

(2) The passive mobility of the shoulder-joint, recorded as (*a*) normal; (*b*) laxity, in which the humeral head could be moved passively in the sagittal plane; (*c*) laxity-subluxation, in which the humeral head could be moved passively in the vertical and sagittal planes; (*d*) mild contracture, in which total passive abduction of the upper arm was not full but was more than 90°; or (*e*) severe contracture, in which passive abduction was limited to less than 90°.

(3) The duration of continuous or almost continuous respirator treatment and the existence of respiratory embarrassment that contra-indicated the use of an abduction splint.

(4) The presence of œdema in the upper limb.

(5) The presence of scoliosis.

(6) The duration of splinting in abduction.

Treatment Groups

During the acute stage of poliomyelitis it was the usual practice, in the infectious-diseases hospitals in which most of the patients were treated, to support an upper arm affected by poliomyelitis in abduction by suitably placed pillows or sandbags, except where treatment in a respirator prevented this. When a patient was admitted to the Royal National Orthopædic Hospital, one of the following régimes of treatment was prescribed:

Group A, the deltoid muscle had been severely affected (M.R.C. grade 0, 1, or 2): 98 cases. Splinting in abduction was continued either by an abduction splint (fig. 1) when the patient was ambulant or sitting, or by pillows when he was recumbent. Adduction of the upper arm was allowed only during periods of active physiotherapy. Splinting was continued for at least four months and in many instances for up to three years, the average time being twenty months. This method was used in two-thirds of the patients admitted before 1950 but progressively less after this time.

Group B, the deltoid muscle had been severely affected (M.R.C. grade 0, 1, or 2): 118 cases. No splinting in abduction was attempted. A simple sling was used for comfort or convenience. This group became relatively larger when a number of surgeons at the Royal National Orthopædic Hospital began to suspect that splinting in abduction was not essential for recovery of the deltoid muscle. The admission of a patient to a bed in the charge of a surgeon who did or did not advocate splinting depended only on the chance vacancy at the time of request for admission. When splinting was considered at all it was more likely to be prescribed where the initial deltoid grade was 0 rather than 1 and 2, and when the involvement was unilateral rather than bilateral.

TABLE I—RECOVERY OF DELTOID MUSCLES IN GROUPS A (SPLINTED) AND B (UNSPLINTED)

—	Initial grade	Final grade						Total	Proportion showing recovery of 1 or more grades (%)
		0	1	2	3	4	5		
Group A (splinted)	0	71	6	5	2	—	—	84	15
	1	—	—	—	5	5	—	10	100
	2	—	—	—	1	3	—	4	100
Group B (unsplinted)	0	34	9	10	2	1	1	57	40
	1	—	—	2	19	5	2	28	100
	2	—	—	—	5	22	6	33	100

Group C, the deltoid muscle had been severely affected (M.R.C. grade 0, 1, or 2): 17 cases. Splinting in abduction was begun as in group A but, for various reasons, was discontinued before the fourth month. These cases could not be considered as having been treated in either group A or B and were therefore analysed separately.

Group D, the deltoid muscle had been severely affected (M.R.C. grade 0, 1, or 2) and the patient had suffered respiratory weakness for which a mechanical respirator had been used: 40 cases. These patients could not wear an abduction splint; since there was not a free choice to splint in these cases, they were analysed separately.

Group E, the deltoid muscle had been moderately or mildly affected (M.R.C. grade 3 or 4): 86 cases. No splinting in abduction was ever used after the sixth week in these cases.

All the patients, whether splinted or not, were given similar treatment by passive movements to the shoulder-joint and by active exercises for the deltoid and other muscles of the upper limb (if working) up to, but not beyond, the point of fatigue.

TABLE II—RECOVERY OF PARALYSED DELTOID MUSCLES IN GROUPS A AND B IN RELATION TO AGE

—	Age (yr.)	Final grade						Total	Proportion showing recovery of 1 or more grades (%)
		0	1	2	3	4	5		
Group A (splinted)	0–4	41	2	1	2	—	—	46	11
	5–14	23	4	3	—	—	—	30	23
	15 or more	7	—	1	—	—	—	8	13
Group B (unsplinted)	0–4	12	2	3	1	—	1	19	37
	5–14	8	2	4	—	—	—	14	43
	15 or more	14	5	3	1	1	—	24	42

Recovery of Deltoid Muscle

The final grades reached by deltoid muscles in groups A and B are shown in table I. There was little difference between the recovery in splinted and unsplinted cases when the deltoid muscle was acting at grade 1 or 2 at six weeks. When the deltoid muscle was paralysed (grade 0) at six weeks, recovery was considerably better in the unsplinted than in the splinted cases. Of the unsplinted muscles 40% (23 out of 57) showed some recovery compared with only 15% of the splinted muscles (13 out of 84). To test the validity of this conclusion analyses were made in relation to four other factors which might have influenced the recovery of the deltoid muscle:

(1) *Age.*—Muscle recovery in poliomyelitis is known to be more rapid and slightly greater in infants and children than in adults (Sharrard 1955). In the age-distribution of groups A and B (table II) there is a predominance of children under the age of 15 in the splinted group (A) and of adolescents and adults in the unsplinted group (B). This might be expected to affect adversely the recovery in group B, but an analysis of the recovery of paralysed deltoid muscles in relation to age shows that in each of the three age-groups 0–4, 5–14, and 15 or more, muscles in the unsplinted group recover more frequently than those in the splinted group. There were too few cases in groups A and B with initial deltoid power of grade 1 or 2 to make a similar analysis by age.

(2) *Calendar Differences.*—An analysis was made of the recovery of paralysed deltoid muscles in groups A and B in relation to the year of onset of the paralysis. This analysis was necessary because the decision by some surgeons to abandon splinting was made before 1949 and by others in 1949 or later. In the early part of the period under review most of the cases were splinted, whereas later more of them were not splinted. It seemed important to show that any differences in the recovery of patients in the two groups were independent of differences from one year to another in the type of patient or in the general severity of the poliomyelitis. The results (table III) show that in each of the periods before 1949 and 1949–52 group B had the advantage over group A. The only exception to this pattern in individual years was in 1948, where the numbers of patients in each group were small and the advantage of group A over group B was insignificant.

TABLE III—RECOVERY OF PARALYSED DELTOID MUSCLES IN GROUPS A AND B IN RELATION TO YEAR OF ONSET OF PARALYSIS

—	Years of onset	Final grade						Total	Proportion showing recovery of 1 or more grades (%)
		0	1	2	3	4	5		
Group A (splinted)	Pre-1949	34	1	4	—	—	—	39	13
	1949–52	37	5	1	2	—	—	45	18
Group B (unsplinted)	Pre-1949	10	3	2	—	—	—	15	33
	1949–52	24	6	8	2	1	1	42	43

The recovery of paretic deltoid muscles (grade 1 or 2) generally showed a slight advantage in favour of group B, but there were too few muscles to allow a satisfactory comparison to be made in individual years.

(3) *Distribution of Affection in Limbs.*—H. D. Darcus (personal communication) has found that, in healthy people, specific exercise training given to one upper limb produces a training effect in the opposite upper limb. The recovery of unilateral and bilateral cases in groups A and B was analysed to exclude the effect of different treatments applied to the opposite shoulder. The results (table IV) indicate that, whatever treatment was being given to the opposite limb, the advantage was still with the unsplinted group (B).

(4) *Severity of Paralysis.*—Among muscles that are still paralysed six weeks after the onset of poliomyelitis there are some, probably over 60% in all, that have been completely and irrevocably denervated by loss of all the anterior-horn cells that supply them. These muscles cannot recover. A useful indication of the severity of the lesion affecting the motor nucleus of a given muscle, and hence its potentialities for recovery, can be obtained from an examination of the power of muscles supplied by the same spinal segments (Sharrard 1954).

A recovery index was calculated for each deltoid muscle. It consisted of the sum of the grades of eight muscles that take some supply from the 5th and 6th cervical spinal nerve-roots: supraspinatus, infraspinatus,

TABLE IV—RECOVERY OF PARALYSED DELTOID MUSCLES IN GROUPS A AND B IN RELATION TO DISTRIBUTION OF AFFECTION IN ONE OR BOTH LIMBS

—	Distribution of affection	Final grade						Total	Proportion showing recovery of 1 or more grades (%)
		0	1	2	3	4	5		
Group A (splinted)	Unilateral ..	43	1	2	1	—	—	47	9
	Bilateral in same treatment groups	13	3	1	—	—	—	17	24
	Bilateral in different treatment groups	15	2	2	1	—	—	20	25
Group B (unsplinted)	Unilateral ..	4	2	1	—	—	1	8	50
	Bilateral in same treatment groups	27	5	7	2	—	—	41	34
	Bilateral in different treatment groups	3	2	2	—	1	—	8	63

TABLE V—RECOVERY OF PARALYSED MUSCLES IN GROUPS A AND B IN RELATION TO RECOVERY INDICES

—	Recovery index	Final grade						Total	Proportion showing recovery of 1 or more grades (%)
		0	1	2	3	4	5		
Group A (splinted)	0–9	56	—	—	—	—	—	56	0
	10–19	13	4	3	2	—	—	22	41
	20–29	2	2	2	—	—	—	6	67
Group B (unsplinted)	0–9	28	3	2	1	—	—	34	18
	10–19	5	2	7	1	1	—	16	69
	20–29	1	4	1	—	—	1	7	86

pectoralis major, teres major, subscapularis, biceps brachii, flexor carpi radialis, and pronator teres. Table v analyses the recovery of paralysed deltoid muscles in relation to these indices and shows that, at all levels of the index, recovery in the unsplinted group B was superior to that in the splinted group A. Similar analyses were made for deltoid muscles of initial grades 1 and 2, but with the small numbers available no consistent or significant advantage was seen in either treatment.

Combined analyses were also made of recovery in relation to age and recovery index, distribution of paralysis and recovery index, and year of onset and recovery index. The detailed results are not given here, since they only confirm the conclusions stated above.

The final grades reached by deltoid muscles in groups C and D are shown in table VI. Group C behaves rather

TABLE VI—RECOVERY OF DELTOID MUSCLES IN GROUP C (SPLINTED LESS THAN 4 MONTHS) AND IN GROUP D (UNSPLINTED WITH RESPIRATORY EMBARRASSMENT)

—	Initial grade	Final grade						Total	Proportion showing recovery of 1 or more grades (%)
		0	1	2	3	4	5		
Group C	0	8	3	2	—	—	—	13	38
	1 and 2	—	—	—	—	4	—	4	100
Group D	0	18	5	5	2	—	—	30	40
	1 and 2	—	—	3	3	3	1	10	100*

* The 3 cases with final grade 2 were initial grade 1

more like group B than group A, though it is too small to show significant deviation from either.

Recovery in group D appears to be as good as, or better than, in groups A or B, and detailed analysis showed this most clearly for paralysed deltoid muscles with low indices of recovery. As regards paralysed muscles with all degrees of recovery index, the proportion of group-D cases showing some improvement is 40% (12 out of 30), the same as in group B (23 out of 57). This group is interesting in showing that a position of adduction during the acute stage, though undesirable because of the liability of develop adductor contracture of the shoulder, does not seem to prejudice the ultimate recovery of the deltoid muscle.

Conclusion.—From these results it appears that splinting in abduction does not aid recovery of the deltoid muscle and may, where the paralysis is severe, actually discourage it.

These results have received independent confirmation in a study of muscle recovery (Sharrard 1955) in which individual muscles of the upper and lower limb, except the deltoid muscle and certain muscles in the shoulder region, showed identical curves of recovery. In these the recovery was slower than the average in other muscles up to the sixth month but was greater at the tenth month. Almost all the cases in that series were splinted; the late spurt of recovery coincided with the time when many of the splints were discarded.

Laxity of Shoulder-Joint

Without exception increased passive mobility of the shoulder-joint was present only if the deltoid muscle had remained paralysed. Furthermore, the impression gained during the clinical examination of these cases was that laxity of the shoulder-joint was often associated with severe paralysis of other muscles that play a part in holding the head of the humerus in the glenoid cavity. A shoulder index was calculated for each case; it consisted of the sum of the grades of eight muscles that act in this way: deltoid, supraspinatus, infraspinatus, pectoralis major, teres major, subscapularis, biceps brachii, and long head of triceps.

Any case in which the index was less than 10 was extremely likely to have a lax shoulder-joint, unless

TABLE VII—PASSIVE MOBILITY OF SHOULDER-JOINT IN GROUPS A AND B IN RELATION TO SHOULDER INDICES

Passive mobility	Shoulder index					
	0–9		10–19		20+	
	A	B	A	B	A	B
Laxity-subluxation ..	31	10	3	—	—	—
Laxity	9	6	5	—	—	—
Normal	2	2	14	17	31	78
Mild contracture ..	1	2	2	1	—	2
Total	43	20	24	18	31	80

an adduction contracture had been allowed to develop during the acute stage of the poliomyelitis. When the index was more than 14 laxity was uncommon, and when it was more than 24 laxity was never observed.

To assess the effect of splinting in abduction, cases in groups A and B at the same level of shoulder index were compared (table VII). At the critical index levels between 10 and 19 laxity-subluxation and laxity were observed in 8 of the 24 splinted (group A) and in none of the 18 unsplinted (group B). Thus it may be that splinted cases suffer a double disadvantage: not only do they recover less completely and hence become more likely to develop laxity at the shoulder-joint, but also, even with such muscle power as is regained, they may be more liable than unsplinted cases to develop laxity.

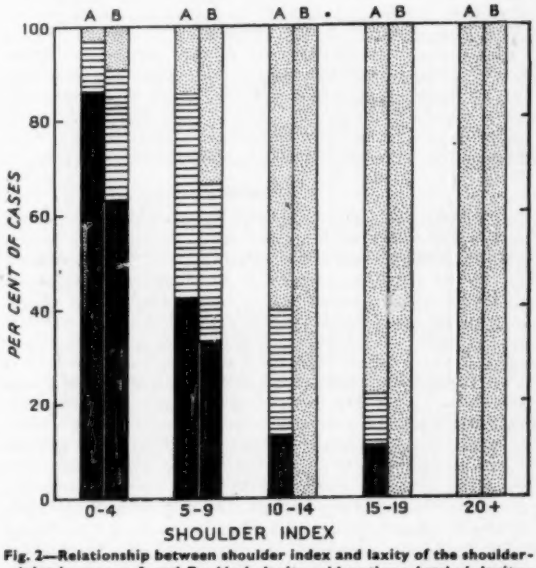

Fig. 2—Relationship between shoulder index and laxity of the shoulder-joint in groups A and B: *black*, laxity subluxation; *hatched*, laxity; *stippled*, no laxity.

The relationship between shoulder index and laxity, and the relative incidence of this condition in muscles in groups A and B are illustrated in fig. 2.

Conclusion.—Splinting in abduction does not reduce or prevent laxity of the shoulder in the presence of weak scapulo-humeral muscles, but in some cases it increases it. Lack of splinting does not increase laxity, which is primarily due to paralysis of muscles that help to maintain the head of the humerus in relation to the glenoid cavity.

Adduction Contracture at Shoulder-joint

A mild adduction contracture was observed in 3 cases in group A (splinted), 5 cases in group B (unsplinted), and 1 case in group C (temporarily splinted)—an incidence of 3%, 4%, and 6% respectively. In contrast to laxity, there was no evidence that contracture in these groups was related to the recovery index. In group D (unsplinted, respiratory embarrassment), however, 18 shoulder-joints showed a severe contracture and 14 a mild contracture, a combined incidence of 80% (table VIII).

TABLE VIII—PASSIVE MOBILITY OF SHOULDER-JOINT IN GROUP D IN RELATION TO DURATION IN TANK RESPIRATOR

Passive mobility	Time in respirator			
	<4 weeks	4–7 weeks	8 weeks or more	Total
Severe contracture ..	0	4	14	18
Mild contracture ..	4	10	0	14
Normal	6	2	0	8
Total	10	16	14	40

Since all the patients in this group had spent some time in a tank respirator, it is reasonable to infer that the limitation of movement was due to the position of adduction of the shoulder and to the fact that it was impossible to give adequate passive movements to the joints during the acute stage of the poliomyelitis. Table VIII shows that the degree of contracture was related to the duration of more or less continuous respirator treatment. Adduction contracture never increased or developed in a shoulder-joint in any case in which it was not present at the initial examination six weeks after the onset of the paralysis. No abnormality of passive movement of the shoulder was observed in group E (unsplinted, mildly affected).

Conclusion.—Adduction contracture arises in cases in which the upper arm lies by the side and adequate passive movements cannot be maintained during the acute stage of the poliomyelitis; after the sixth week splinting in abduction is unnecessary to prevent a contracture from developing in a mobile joint.

Scoliosis

In 39 patients the paralysis of one shoulder was severe (a recovery index of 9 or less) while the muscles of the opposite shoulder and in the remainder of the body showed no clinical paralysis. Such a distribution of paralysis has been said to cause a thoracic scoliosis because of the unequal muscle pull on the two sides of the body exerted by muscles passing between the trunk and the upper limbs. Not a single structural scoliosis was found even in cases examined six years after the onset of the paralysis, whether a splint had been worn or not. In 10 cases a mild postural curvature of not more than 15° was present; in only 1 case was there a postural curvature of greater degree than this, and the curve was in the opposite direction to that which might have been anticipated from the site of the paralysis. It was almost certainly due to the wearing of an abduction splint and disappeared a few weeks after the splint was discarded. Eighteen other patients developed a structural scoliosis; in all of them the trunk muscles, especially the intercostal or lateral abdominal muscles, had been asymmetrically affected. This confirms an observation first made by J. I. P. James (personal communication).

Conclusion.—Neither shoulder-girdle paralysis nor splinting in abduction has any influence on the development or prevention of structural scoliosis in poliomyelitis.

Œdema

No œdema was found in any upper limb in this series after the sixth week.

Splinting as an Aid to Function

Whatever the eventual recovery of the deltoid muscle, the opinion of many patients who had worn a splint was that the limb was much more useful after the splint had been discarded. The splint was regarded by the majority as an evil necessary to obtain recovery. Exception must be made in one limited category: patients in whom bilateral abductor paralysis at the shoulder is combined with weakness of elbow flexion with the result that the forearm cannot be raised against gravity. In such a patient the upper limbs lie by the side, and he cannot make the best use of any muscles that have remained active in the forearm and hand, because he cannot bring either hand up to waist level. After a time he develops trick methods of placing the hand where he wishes it to lie, but, as a temporary expedient, an abduction splint angled at 45° rather than 90° will raise the elbow to a level from which weak elbow flexors can flex the joint. This use for an abduction splint is especially indicated in infants or young children in whom muscle re-education mainly depends on spontaneous activity and play.

We must emphasise that a splint for this purpose differs in principle and in design from that shown in fig. 1. Its function is to act as a platform rather than as a rigid splint. A "lively" splint of the Capener (1949) type to which the limb is not tied is the most appropriate; it is not intended that it should be worn at all times but only as required. In older children or in adults with bilateral paralysis it is occasionally useful but it is rarely indicated in unilateral paralysis. Almost all patients, however young, eventually learn to facilitate activity in the paralysed limb by putting it into a useful position with the opposite hand.

Discussion

The deleterious effects of over-stretching of paralysed muscles was recognised by Lovett (1915). Many of the splints used in the treatment of the paralysis of poliomyelitis—e.g., cock-up splints in paralysis of the wrist-extensor muscles and apparatus for control of the paralysed foot—have been designed to prevent over-stretching of muscles as well as to prevent deformity and aid function. We do not deny this principle; indeed on several occasions one of us has witnessed late return of power in paralysed muscles following correction of deformity or after transplantation of powerful antagonist muscles.

That the converse is true—i.e., that relaxation of a muscle is necessary for its recovery—has never been demonstrated. The recovery of the triceps suræ in poliomyelitis and in injuries to the sciatic nerve (Seddon 1949) in spite of the application of toe-raising springs, the recovery of hamstring muscles, although the knee is splinted in extension, and numerous other examples suggest that relaxation is not essential for muscle recovery.

Studies of the physiology of isolated muscle (Evans and Hill 1914, Doi 1921) show that an optimal initial tension is necessary for the development of maximal contraction in muscle. In the body reflex mechanisms operating through muscle spindles and other proprioceptors enhance this action. Provided that the principles of the prevention of deformity do not conflict

with it, a mid-position of a joint that leads to moderate tension in the muscles controlling it is likely to encourage recovery.

At the shoulder-joint all parts of the deltoid muscle are under optimal tension when the upper arm lies in the habitual position by the side of the body; the position of maximal stretch for the middle fibres of the muscle is with the upper arm fully adducted across the chest, and for the anterior and posterior fibres is with the upper arm abducted and extended or flexed respectively. The position of the upper arm by the side therefore seems to be the ideal one for recovery of the deltoid muscle, and our results support this view.

That the laxity of the shoulder-joint increases in proportion to the degree of paralysis in the scapulo-humeral musculature is only to be expected, since one of the main actions of these muscles is to retain the humeral head in apposition with the glenoid cavity. When the shoulder is abducted, the shape of the articular surface of the head of the humerus is such that all except the superior fibres of the capsule of the shoulder-joint are stretched; this may account for the increased joint laxity which we found in the splinted cases. When the arm is by the side, only the superior fibres of the capsule are liable to be stretched by the weight of the limb; when, in a severe paralysis, this is likely to happen, a simple sling is adequate to minimise it.

Provided that full passive mobility of the shoulder is present six weeks after the onset of the paralysis and is maintained by a single daily manipulation after this time, no contracture will develop, even though the arm lies by the side. Before this time a position of abduction at the shoulder and the maintenance of as much mobility as is possible are essential. Since the patient is usually confined to bed during most of this critical period, it is sufficient to support the limb in abduction on a pillow, and an abduction splint is inappropriate. Only those patients who can become ambulant before a month require an abduction splint as a temporary measure to ensure that the adductor muscles of the shoulder do not shorten, and to guard against the development of œdema in the hand.

There is no need to discuss here the inconvenience of splinting in abduction; the projecting encumbrance is a nuisance alike to the child and the adult and may be a positive danger to others in crowded places. The position of the forearm and hand in an abduction splint is only useful for one purpose, that of feeding; since most manual activities are carried on at the level of the waist, splinting in 90° of abduction considerably diminishes the range of usefulness of the forearm and hand. If, when the patient is confined to bed, he can feed himself better with the shoulder in abduction, an appropriate arrangement of vertical slings and springs produces the same effect as an abduction splint but allows much greater mobility without constraint to the chest.

Conclusion.—Except in the acute stage of poliomyelitis and in certain special circumstances in the convalescent stage, splinting in abduction is unnecessary and should be discontinued in the routine treatment of abductor paralysis at the shoulder.

Summary

This study is based on 359 upper limbs in which some degree of abductor paralysis at the shoulder was present six weeks after the onset of acute poliomyelitis. Records were made of the power of the deltoid and other muscles of the shoulder and upper arm, of the passive mobility of the shoulder-joint, and of the function of the upper limb at this time and not less than eighteen months later. The final state of cases in which an abduction splint had been used was compared with that in cases in which no splint had been used after six weeks from the onset of the poliomyelitis.

The recovery of deltoid muscles paralysed (M.R.C. grade 0) at the initial assessment was found to be diminished by splinting in abduction. The recovery of paretic muscles (grades 1 and 2) appeared to be unaffected by splinting in abduction.

The incidence of laxity of the shoulder-joint was shown to be related to the severity of the paralysis of the scapulo-humeral muscles; this laxity was increased by splinting in abduction.

Adduction contracture, if not already present, did not develop after six weeks in unsplinted shoulders that were passively mobilised daily. In the acute stage of the poliomyelitis, on the other hand, immobilisation of the upper limb by the side, as happens when continuous respirator treatment is necessary, produced a more or less severe adduction contracture.

Structural scoliosis was never found when the paralysis had affected the upper-limb musculature alone, even where this paralysis was severe and unilateral. Splinting in abduction to prevent scoliosis is therefore unnecessary.

Occasionally a partially abducted position of the shoulder may allow better function of the remainder of the upper limb. If so, a modified splint may be useful in bilateral abductor paralysis in young children.

The principles underlying the use of abduction splints are discussed; it is concluded that, except in the acute stage of poliomyelitis and in special circumstances in the convalescent stage, splinting in abduction is unnecessary and sometimes harmful.

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CHLORAMPHENICOL AND PENICILLIN IN THE TREATMENT OF LEPTOSPIROSIS AMONG BRITISH TROOPS IN MALAYA

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IT is extremely difficult to assess reliably the value of any form of treatment in leptospirosis, because the severity, course, and complications of this disease vary greatly, even among patients infected by identical leptospiral serotypes. There is still doubt about the value of antibiotics in leptospirosis, as is well shown by the conflicting opinions so far published.

Before the advent of antibiotics, the most widely used form of therapy was immune serum. Inada et al. (1916) were the

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first to try it in experimental infections in guineapigs, and later therapeutically in man. Serum was effective in protecting guineapigs when given with an inoculation of *Leptospira icterohæmorrhagiæ*. Walch-Sorgdrager (1939) reviewed the results of serum treatment in cases examined serologically at the Institute of Tropical Hygiene, Amsterdam. No definite evidence of its value was found, although there was a strong clinical impression that it was useful.

Most of the antibiotics now available have been examined for their effect on leptospirosis both in experimentally infected animals and in man. At first sight the results of these experiments are encouraging.

Previous Experience with Antibiotics

PENICILLIN

Experimental Observations

Alston and Broom (1944) and Chang (1946) found that penicillin inhibited the growth of *L. icterohæmorrhagiæ* cultured in Fletcher's medium.

Heilman and Herrell (1944) found that guineapigs artificially infected with *L. icterohæmorrhagiæ* were protected by penicillin administered seventeen to twenty-four hours after inoculation. Alston and Broom (1944) agreed that penicillin administered eighteen hours after inoculation reduced the death-rate. Augustine et al. (1944) gave penicillin to guineapigs on the fourth day after inoculation, when jaundice was present, but observed no benefit. They next gave the antibiotic thirty-eight hours after inoculation. There was no difference in the mortality-rate; but no animal became jaundiced, and life was prolonged. Chang (1946) repeated these experiments, but gave penicillin on the third, fourth, fifth, and sixth days after inoculation. Penicillin had a therapeutic effect if administered before the onset of jaundice, but once jaundice had appeared penicillin was useless. This was similar to the findings of Larson and Griffiths (1945).

Throughout most of these experiments, difficulties arose over the possible toxic effects of penicillin on guineapigs. It was noticed that some of the animals receiving penicillin died without evidence of leptospirosis or of any other disease. Dunn and Thompson (1953) therefore tried the effect of penicillin on experimental infection in hamsters. Treatment was started twenty-four hours after inoculation, and it protected the animals against death. But specimens of their livers and kidneys subinoculated into other hamsters produced leptospirosis, even when the inoculated animals were receiving sixteen times the amount of penicillin necessary to protect them against death.

These experiments showed that penicillin must be given early if it is to be effective—probably within twenty-four hours after inoculation. Even then, leptospiræ may be recovered from the liver during and after treatment (Chang 1946, Dunn and Thompson 1953). If these findings are applicable to man, treatment would have to anticipate the dissemination and multiplication of leptospiræ in the tissues, which normally takes place during the incubation period of four to twelve days. In practice, treatment is seldom started before the fourth day of the disease—and often later.

Clinical Observations

It is difficult, especially with a small number of cases, to decide whether an antibiotic has influenced the natural course of leptospirosis. By the time the patient has been admitted to hospital, his illness diagnosed, and antibiotic treatment started, a natural improvement in his condition is usually starting.

There have been many reports of the beneficial effects of penicillin in leptospirosis, based on a small number of treated cases (Bulmer 1945, Carragher 1945, Cross 1945, Baber and Stewart 1946, Niemi 1946, Moreau et al. 1947, Patterson 1947, Mackay-Dick and Watts 1949, Danaraj 1950, Lawson 1951, Suchett-Kaye 1951).

Hutchinson et al. (1946) reported a series of cases in Italy. The illness was severe, and all patients were jaundiced. 6 patients received penicillin in doses of 15,000 units three-hourly, to a total of 600,000–660,000 units. Hutchinson et al. considered that penicillin had no significant effect on the disease, but it is difficult to draw any definite conclusions from this small series because treatment was started after the onset of jaundice, and the penicillin dosage was low by present-day standards.

Broom (1951) reviewed the results of penicillin therapy in 206 patients treated in several hospitals throughout Britain. The mortality in this group did not differ significantly from that in 259 patients who were not given penicillin.

Recently Doherty (1955) has recorded a larger series of cases treated with penicillin in dosages of 100,000–500,000 units three-hourly. Doherty concludes that penicillin in large doses significantly reduced the duration of fever. Unfortunately this series was highly selected. There were only 8 controls out of 111 cases, and the patients were treated at eight different hospitals, most of which used their own antibiotic régime. Doherty also says that the time of temperature-taking and the use of antipyretics varied from one hospital to another. Finally, the observers were presumably aware of the type of treatment the patient was having. This is important because the practitioners in the area were strongly in favour of penicillin therapy.

CHLORAMPHENICOL AND OTHER ANTIBIOTICS

Experimental Observations

Chloramphenicol has given less encouraging results.

Schlipköter and Beckers (1951) showed that all the species they tested had considerable resistance, especially *L. autumnalis*. They anticipated that chloramphenicol would have no therapeutic action in man. Dunn and Thompson (1953) found that in hamsters chloramphenicol gave no protection against death.

Aureomycin and *oxytetracycline* have been found to be effective in vitro (Heilman 1948, Ormsbee 1953, Schlipköter and Gram 1952) and in vivo provided they are given early (Schlipköter and Beckers 1951).

Clinical Observations

Hall et al. (1951) reported on 79 cases from an epidemic of leptospirosis in Puerto Rico.

Antibiotic trials were made in sequence, one type of treatment finishing before another was started. 12 patients who were not given antibiotics acted as controls; and the remainder received either *penicillin*, *streptomycin*, *aureomycin* (chlortetracycline), *oxytetracycline*, combined *streptomycin and aureomycin*, or *cortisone and aureomycin*.

No significant effect on the course of fever, jaundice, renal involvement, neurological manifestations, and leptospiræmia was observed. Because six different methods of treatment were employed, the number of patients in each group was small.

Doherty (1955) drew no definite conclusion about the value of *chloramphenicol* from his series of cases.

Several workers have reported that *aureomycin* and *oxytetracycline* are beneficial (Batchelor and Todd 1950,

TABLE I—CLASSIFICATION OF PATIENTS ACCORDING TO SEROTYPES

—	No. of patients	Group A (controls)	Group B (penicillin)	Group C (chloramphenicol)
SEROTYPES:				
L. australis A	1	..	1	..
L. australis B	3	..	2	1
L. bankinang	2	..	..	2
L. canicola	8	2	3	2
L. celledoni *	1	..	..	1
L. grippotyphosa	3	..	..	3
L. poi	1	1	..	..
L. pomona	1	..	..	1
L. wolffii	1	..	..	1
SEROGROUPS:				
Australis A	1	..	..	1
Autumnalis	3	..	..	3
Hebdomadis	17	4	8	5
Icterohæmorrhagiæ	5	1	1	3
Javanica	2	1	..	1
Pyrogenes	1	1	..	..
Unidentified	33	20	6	7
Total	83	31	21	31

* A new serotype isolated in Australia by Smith et al. (1954).

TABLE II—AVERAGE DAY OF ILLNESS ON WHICH PATIENTS WERE ADMITTED AND TREATMENT WAS STARTED

Treatment group	Admitted (day)	Treatment started (day)
A (controls)	4·0	4·0
B (penicillin)	3·4	4·7
C (chloramphenicol) ..	4·0	5·0

Brainerd et al. 1949, Liebowitz and Schwartz 1951, Lurrie 1949, Stagg and Liebovitz 1951, Whitehouse 1952). Nearly all these reports were based on a few cases, and are open to the same criticisms that apply to the reports on treatment with penicillin.

Materials and Methods

Leptospirosis is quite common among British troops engaged in jungle operations in Malaya. The mortality is very low; only 2 deaths were reported among 160 confirmed cases notified in 1954. 1 of these 2 patients had malaria as well, and there was a certain amount of doubt about the diagnosis in the other (D. G. Levis, personal communication). The disease is not severe, and of the present series only 4% became jaundiced and 5% had oliguria or anuria (oliguria is here defined as a urinary output of 10 oz. or less in twenty-four hours).

In the present series the patients, all of whom were men, had been admitted to one of two military hospitals in Malaya. Their ages ranged between 18 and 35 years, the average being 21. 71 patients were British, 9 were Gurkhas, 2 were Malays, and 1 was Chinese. The predominance of Europeans is not due to selection but reflects the lower incidence of leptospirosis among Asian troops.

TABLE III—AVERAGE TIME FROM ONSET TO FREEDOM FROM SYMPTOMS AND SIGNS

Treatment group	Symptom-free (days)	Sign-free (days)	Apyrexial (days)	Symptom-free and sign-free (days)
A (controls)	9·4	9·9	9·0	10·8
B (penicillin)	8·2	9·5	7·6	9·7
C (chloramphenicol) ..	8·9	10·0	8·8	10·5

Paired specimens of serum were sent to Dr. J. C. Broom, of the Wellcome Laboratories of Tropical Medicine, London, for agglutination tests. In some cases blood was cultured in Fletcher's medium, and a few of the strains obtained were sent to Dr. Broom for identification.

It was possible to identify the serotype or serogroup in 50 out of 83 cases, either by agglutination or by culture. In the remaining patients the agglutination tests were positive, but accurate identification of the serogroup was obscured by heterologous rises in titre.

The patients were further subdivided into controls, and those receiving penicillin and chloramphenicol (table I).

The serotypes or serogroups among the controls were less easily identified. In the few patients in whom jaundice or oliguria developed, no correlation with any particular serogroup was obtained.

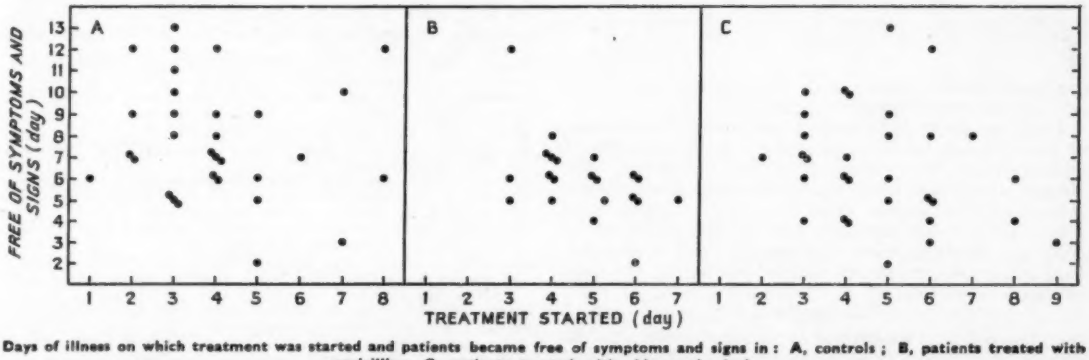
Patients were placed in rotation in one of three groups. Patients in group A received no antibiotics and acted as controls. Patients in group B were given penicillin 600,000 units six-hourly; and those in group C chloramphenicol 0·5 g. six-hourly. Treatment was started as soon as the diagnosis was made. Antibiotics were given for at least five days, and often beyond that until the patient had been afebrile and free of symptoms and signs for twenty-four hours. The average duration of treatment in group B was six days, and in group C 6·2 days.

TABLE IV—RESULTS CLASSIFIED ACCORDING TO WHETHER TREATMENT WAS STARTED ON OR BEFORE, OR AFTER, FOURTH DAY OF ILLNESS

Treatment group	Treatment started: On or before fourth day — No. of patients	On or before fourth day — Av. time from start of treatment till symptom-free and sign-free (days)	On or after fifth day — No. of patients	On or after fifth day — Av. time from start of treatment till symptom-free and sign-free (days)
A (controls)	22	8·2	9	6·7
B (penicillin)	10	6·9	11	5·0
C (chloramphenicol) ..	14	7·0	17	6·1

Symptoms and signs were recorded daily on a standard chart by one of two observers who were unaware of the group to which the patient had been allotted. Subsequently, some cases were excluded because of an associated attack of malaria, or because the diagnosis was not confirmed. This resulted in uneven numbers of patients appearing in each group, the numbers being: group A (controls), 31; group B (penicillin), 21; and group C (chloramphenicol), 31 (total 83).

Table II shows the average day of illness when the patients were admitted, and the day on which treatment was started. In the control group the day of admission was called the first day of treatment, which consisted in rest in bed, fluid replacement, and analgesics for pain. This régime was also employed in groups B and C, but the day when antibiotics were first given was termed the day that treatment was started. There was a time-lag of approximately twenty-four hours in the start of treatment in groups B and C.



Days of illness on which treatment was started and patients became free of symptoms and signs in: A, controls; B, patients treated with penicillin; C, patients treated with chloramphenicol.

Results

Table III shows the average time from onset of symptoms until the patients were symptom-free, sign-free, and apyrexial.

There was no significant difference between the duration of illness in the three groups. This is most convincingly shown in the last column of table III. Symptoms and signs developing during a relapse are considered separately.

The patients in each group are classified in table IV into those whose treatment was begun on or before the fourth day, and those whose treatment was begun on or after the fifth day. Table IV shows that early treatment with antibiotics did not shorten the average length of the illness; in fact in all three groups the average number of days taken to become symptom-free and sign-free was greater when treatment was started early. This is confirmed by the accompanying figure, in which the day on which the patient became free of symptoms and signs after the start of treatment is plotted against the day on which treatment was started. The wide scatter is not influenced by the antibiotics.

"After-peaks" of Pyrexia

An "after-peak" of pyrexia is here arbitrarily defined as any rise of temperature to 100°F or over, forty-eight or more hours after the patient first became apyrexial. A few patients had transitory rises in temperature below 100°F unassociated with symptoms and signs; but these were regarded as insignificant.

TABLE V—INCIDENCE OF JAUNDICE, OLIGURIA, AND ANURIA

Treatment group	No. of patients with jaundice	No. of patients with oliguria or anuria
A (controls)	2	2
B (penicillin)	Nil	1
C (chloramphenicol)	1	1

"After-peak" pyrexia occurred in only 14% of all the patients. 6 were in group A (controls), 3 in group B (penicillin), and 3 in group C (chloramphenicol). The numbers are too small for any definite conclusions.

Complications

Jaundice, and oliguria or anuria.—Table V shows the incidence of these complications in each treatment group. There was no significant difference between the three groups, but the numbers were too small for us to draw any definite conclusions from them.

TABLE VI—BLOOD-UREA LEVELS

Treatment group	Av. day of illness blood-urea first estimated	No. of patients with blood-urea estimated every third day	No. of patients in whom blood-urea rose after start of treatment
A (controls)	4·3	12	4
B (penicillin)	3·7	10	2
C (chloramphenicol) ..	3·3	11	4

Uræmia—In 33 patients admitted before the fifth day of their illness, the blood-urea level was estimated on admission and then every third day. In 10 of these cases the level rose by 15 mg. per 100 ml. or more during treatment—the higher blood-urea level always being above 40 mg. per 100 ml. The results are shown in table VI. The numbers are small, but there is no significant difference between the distribution among the three groups.

Discussion

In this series no benefit was obtained from the administration of penicillin or chloramphenicol, and we suggest that these two antibiotics have no place in the treatment of leptospirosis in Malaya.

This series included many mild cases, and complications were few. Because leptospirosis is common among troops in Malaya, the standard of diagnosis is high and few cases are missed, whereas in countries where the disease is rare it is mainly the more severe cases that are recognised. This may partly account for the different descriptions of the severity of leptospirosis throughout the world. In our series the serotypes were widely represented (table I); this suggests that if penicillin and chloramphenicol are of no value in the treatment of leptospirosis in Malaya, it is unlikely that they will prove useful elsewhere.

Summary

A controlled trial of penicillin and chloramphenicol in the treatment of leptospirosis among British troops in Malaya is reported.

Patients were placed in rotation in one of three groups. One group of patients received no antibiotics and acted as control. The second group received penicillin, and the third group received chloramphenicol.

There were no significant differences between the three groups in the times taken to become symptom-free and sign-free and apyrexial, or in the incidence of complications. This was true even when treatment was started on or before the fourth day of the illness.

Penicillin and chloramphenicol play no useful part in the treatment of uncomplicated leptospirosis in British troops in Malaya, and we suggest that these antibiotics are unlikely to be of value in the treatment of leptospirosis elsewhere.

We thank Lieut.-General Sir Frederick Harris for permission to publish this paper; Colonel A. P. Trimble, consulting physician to the far eastern land forces, for his help throughout the trial; the sisters of the Q.A.R.A.N.C. for their coöperation in this work; and Dr. J. C. Broom for his help and advice.

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DUODENAL BIOPSY

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THE method of gastric biopsy by blind suction through a gastric biopsy tube (Wood et al. 1949) has been safely applied to many patients (Doig 1954, Palmer 1954, Joske et al. 1955) but has not hitherto been extended to biopsy of the duodenum.

It was thought that a modified tube might be passed beyond the pylorus to sample duodenal or even jejunal mucosa, and that this technique might be of diagnostic value in such conditions as steatorrhœa, Crohn's disease, "duodenitis," and dyspepsia without positive radiographic findings.

The main modifications required were greater length and a shorter head embedded in a rounded metal shield.

Fig. 1—Tube 1 : headpiece and tailpiece.

X-ray control was essential in guiding the course of the tube.

The histological findings of 12 successful duodenal biopsies are reviewed here.

Method and Patients Studied

The duodenal biopsy tube (fig. 1) is a flexible tube, 128 cm. long and 4·8 mm. in diameter coated with plastic material to make it smooth and airtight. Its headpiece is a small tube 3·9 mm. in external diameter, at whose centre is the circular biopsy aperture 3·1 mm. in diameter. In this small tube the knife-cylinder is accommodated which is screwed to the wire running along the whole length of the instrument and ending in a small holder at the tailpiece. The small tube of the headpiece is embedded in a solid weighty elliptical nickel ball 12·3 mm. in diameter to give smooth easy forward propulsion by gastric and duodenal peristalsis. The tailpiece contains the other end of the wire and the lateral exhaust-tube, to which a syringe or a pressure manometer can be attached to apply negative pressure.

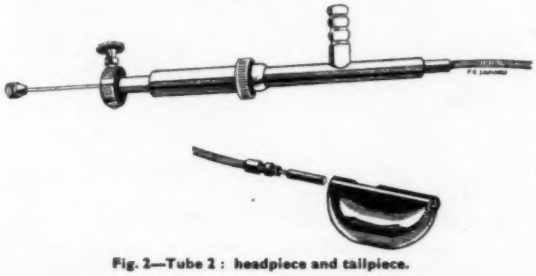

Fig. 2—Tube 2 : headpiece and tailpiece.

Fig. 2 shows a second duodenal biopsy tube, which was used originally. It is as long as the first tube but only 2·7 mm. in diameter. The headpiece is rather weightier and 14·2 mm. in diameter. The biopsy aperture measures 2·3 mm. in diameter and the small tube within the headpiece 3·1 mm. in diameter. Both tubes have been used with about equal success.

Fig. 3—Headpiece of duodenal biopsy tube in first or second part of duodenum.

Samples were obtained from 12 patients with gastrointestinal symptoms. In 7 the diagnosis was in doubt even after full radiographic and other studies. In the remaining 5, who had gastric ulcer (2), duodenal ulcer (2), and hiatus hernia (1), the instrument was used primarily for gastric biopsy ; but, since there was no difficulty in passing the tube beyond the pylorus, duodenal biopsy was done as well. The procedure was carefully explained to the patients and permission obtained from all.

The fasting patient gargles with 2–3 ml. of 1% amethocaine solution. The stomach need not be emptied beforehand, because gastric juice does not interfere with duodenal biopsy. With the patient lying relaxed on his left side with knees drawn up and head and trunk on the same level, the well-oiled tube is passed into the stomach. The tube is occasionally held up at the pharynx and the cardia, but this can easily be overcome by making the patient swallow and by exerting gentle pressure on the tube. When the stomach is reached, the head end of the tube is guided, under fluoroscopic control, by the palpating hands of the operator on the patient's abdomen. As soon as the required position in the duodenum is attained (figs. 3 and 4) the biopsy is attempted. The wire is operated at the tailpiece to open the biopsy aperture, and a negative pressure of at least 25 inches Hg is applied. Then a sharp closing movement of the wire will secure the biopsy specimen within the knife-cylinder. If it is necessary to take samples from different levels, the position of the headpiece may be adjusted and the manœuvre repeated. Before the tube is withdrawn, its position is again checked fluoroscopically. After withdrawal the specimens are freed from the knife-cylinder and placed in 15% formol saline solution

Fig. 4—Headpiece of duodenal biopsy tube in second or third part of barium-filled duodenum.

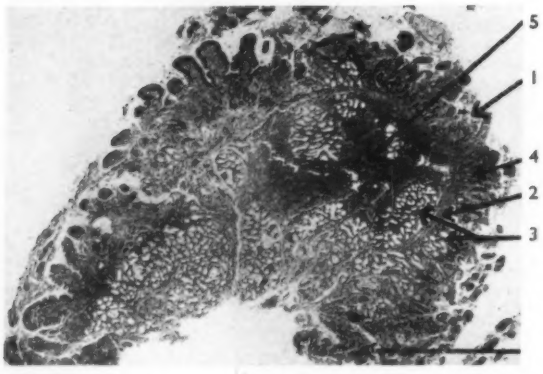

Fig. 5—Type-1 biopsy specimen: 1, villi; 2, muscularis mucosæ; 3, Brunner's glands; 4, crypts of Lieberkühn; 5, hæmorrhage. (Hæmatoxylin and eosin. × 19.)

or in formol calcium, and histological preparations are made. The patient is given a light meal and closely observed for twenty-four hours. No complications developed in the present 12 cases.

Results

Duodenal biopsy was attempted in 19 cases and was successful in 12 of them. Many of the earlier failures were due to inexperience and lack of practice. The failures were due to inability either (*a*) to reach the duodenum or (*b*) to obtain specimens. Inability to reach the duodenum was due to spasm at the pharynx, the cardia, or the pylorus. Spasm at the first two sites was usually overcome when the patient relaxed, but spasm at the pylorus did not seem to be under voluntary control and caused failure in 2 patients. Inability to obtain specimens when the duodenum was reached was responsible for 5 more failures and was probably due to earlier technical difficulties in the construction of the tubes.

The size of the specimens was difficult to measure. Usually several specimens were clumped together, and attempts to separate them before fixation may have broken them up. The number of specimens obtained varied from 1 to 5. In size they compared well with those obtained by gastric biopsy. The naked-eye appearances were those of small fleshy pinkish pieces of tissue held together by mucus. The depth of the specimens varied according to their site, being deepest in the first part of the duodenum and becoming progressively less deep distally. Of the 12 specimens 2 were not deep enough to warrant detailed histological description.

Histology

No correlation of the histological appearances of the duodenum with the clinical diagnosis has yet been attempted; nor does the number of biopsy specimens studied permit histopathological classification or comparison. The over-all histological appearances assumed three different patterns varying with the levels of duodenum from which the specimens were taken. Some of the specimens showed typical Brunner's glands, whereas others showed the type of mucosa usually associated with the small intestine.

Type 1.—Of the 12 specimens 2 showed this histological pattern. The site from which they were taken is shown in fig. 3. The specimen shown in fig. 5 comprises the full depth of mucosa and submucosa. The villi are well marked though somewhat shorter and broader than those of type 2 (see below). Their surface epithelium contains columnar cells with goblet cells interspersed between them. The stroma of the villi and lamina propria of the mucosal layer contains a moderate amount of lymphocytes, plasma-cells, a few eosinophils, and an occasional polymorph. The crypts of Lieberkühn and their glands lie in the mucosal layer and are continuous superficially with the surface epithelium and deeply with Brunner's glands. They are composed of low columnar cells, Paneth cells, and argentaffin cells. A thin layer of smooth-muscle fibres, the muscularis mucosæ, separates the mucosa from the submucosa. It is occasionally penetrated by a group of Brunner's glands, though most of these glands are found in the submucosa, which is rather deep, containing numerous groups of Brunner's glands, characterised by their low columnar cells with clear cytoplasm and flat basal nuclei. These groups of glands are separated by strands of fibrous tissue.

Type 2.—This type was seen in 3 specimens and differs from type 1 in possessing longer and narrower villi, denser cellular infiltration, and a rather thick layer of muscularis mucosæ. In the specimen shown in fig. 6 only a small group of Brunner's glands is evident at the centre, lying in the submucosa. The type of cellular infiltration is similar to that described in type 1.

Type 3.—This type was seen in 5 specimens. Fig. 4 shows the site from which the specimen shown in fig. 7 was taken, probably the third part of the duodenum. Again, as in type 2, the villi are high and branching, and the muscularis mucosæ is rather thick and well developed. Brunner's glands are not seen either above or below the muscularis mucosæ. I have recently obtained several jejunal biopsy specimens from a patient who had previously undergone a Polya gastrectomy. The histological appearances of these jejunal specimens resembled in every respect those seen in type 3. Possibly the lower part of the duodenum has the same histological pattern as the small intestine.

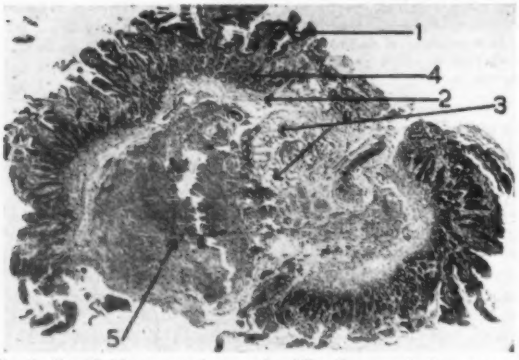

Fig. 6—Type-2 biopsy specimen: 1, villi; 2, muscularis mucosæ; 3, Brunner's glands in submucosa; 4, crypts of Lieberkühn; 5, hæmorrhage. (Hæmatoxylin and eosin. × 23.)

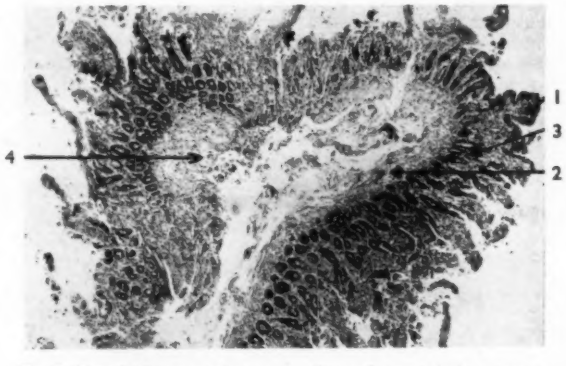

Fig. 7—Type-3 biopsy specimen: 1, villus; 2, muscularis mucosæ; 3, crypts of Lieberkühn; 4, submucosa. (Hæmatoxylin and eosin. × 35.)

Discussion

This technique has proved safe and satisfactory in obtaining duodenal specimens, but it has the disadvantage that the specimen is taken blindly and its exact position in the duodenum is uncertain. If a little barium is given before the tube is passed, it may be possible to determine what part of the duodenum is being subjected to biopsy.

As regards the construction of the two tubes, the advantage of tube 2 (fig. 2) over tube 1 (fig. 1) lies in possessing a larger and weightier headpiece on a narrower shaft. The duodenum is reached with greater ease, and the long wire does not coil inside the narrow plastic tube. The disadvantage lies in the smaller negative pressure obtained through this narrow tube. Earlier failures to obtain specimens were attributed to this technical defect; so tube 1 was constructed with a greater diameter. It was found that the wire tended to coil much more, but the size of the biopsy aperture and the improved suction were very satisfactory. The range of movement of the knife-cylinder to open and close the biopsy aperture is necessarily small and controlled at a point some distance away. Moreover the tube, once in the desired position, is not straight. The curves of the tube vary from patient to patient, and there is no way of regulating the wire's movements beforehand. It is therefore evident that a more certain way of knowing when the aperture is open is required. Experience in handling the instrument has largely, if not entirely, overcome this difficulty.

The risks attending duodenal biopsy are probably comparable to those attending gastric biopsy—namely, perforation of the pharynx, œsophagus, or stomach, and hæmorrhage, usually hæmatemesis. Perforation has been reported in 1 of 589 cases (Coghill and Williams 1955), in none of 1226 cases (Joske et al. 1955), and in none of 1000 cases (Doig 1954). Hæmatemesis is more common but rarely fatal: it has been reported in 7 of 589 cases (Coghill and Williams 1955) and in 8 of 1000 cases (Doig 1954). No complications developed in my own series of 130 gastric biopsies, and in the present 19 attempts at duodenal biopsy.

As already stated, 2 of the 12 successful duodenal biopsies did not yield enough tissue to warrant detailed histological analysis. This is another difficulty peculiar to duodenal biopsy. The gastric surface epithelium is smooth though thrown into rugæ, whereas the duodenum has large branching villi in continuous motion, with much debris and mucus overlying them. Sometimes cellular debris and the tips of a few villi only are caught within the biopsy aperture. Other specimens showed a satisfactory depth of mucosa, but the villi appeared "decapitated."

The three histological types described seem to represent different levels of duodenum. Type 1 comes from the first and second parts of the duodenum and shows typical Brunner's glands. Type 3 comes from the second and third parts of the duodenum and resembles intestinal mucosa. A detailed study of the level at which one type of mucosa changes into the other is obviously necessary.

Another point of interest for future studies arises from the part played by the duodenum, especially its lower end, in various diseases of the small intestine. A jejunal biopsy specimen was obtained in 1 patient with a Polya gastrectomy. Slight modification of the duodenal biopsy tube may enable us to reach the normally sited jejunum.

Summary

A method of blind duodenal biopsy is described, and 12 biopsy specimens are discussed.

The difficulties and the possible practical applications of the method are mentioned.

The attendant risks are compared with those of gastric biopsy.

No complications developed in 19 attempts at biopsy.

My thanks are due to Dr. Sheila Sherlock for stimulating and helpful criticism; the Genito-Urinary Manufacturing Company, particularly Mr. G. Hawkins, for coöperation in constructing the duodenal-biopsy tube; Miss E. J. Wernli for helpful assistance; Mr. J. G. Griffin for the histological preparations; Mr. F. G. Saunders for the drawings; and Miss R. Klein for the photomicrographs.

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THE HOSPITAL STAPHYLOCOCCUS

A COMPARISON OF NASAL AND FÆCAL CARRIER STATES

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THE frequency with which staphylococcal disease is acquired in hospital causes increasing concern (*Lancet* 1955a). It is widely held that the nasal carrier is the main source of infection in outbreaks of such disease. Is this the whole truth? We draw attention here to the fæcal carrier as a potential source of infection in staphylococcal disease and point out that such a carrier is commonly also a nasal carrier.

Brodie et al. (1955) emphasised the value of serological typing of staphylococci in the study of outbreaks of staphylococcal disease. This method of typing was adopted in the present study. The search for fæcal carriers was based on isolations from rectal swabs. Confirmation that the source of these strains was the fæces, and *not* the skin of the buttocks, was obtained by a series of comparative tests of the nose, skin, and fæces.

The simultaneous search for nasal and fæcal carriers was made in two dysentery wards in which there was an outbreak of staphylococcal disease at the time of the survey.

Results of Survey

CARRIER STATE IN THE WARDS

Table I compares the "snapshot" picture of the carrier status at the start of the survey with that of patients on admission to and after one week's residence in hospital. This table includes the results for nasal and fæcal strains. The following points are to be noted:

(1) The general picture obtained by the single "snapshot" is little different from that obtained from the group of patients examined after one week's stay in hospital.

TABLE I—COMPARATIVE ANALYSIS OF CARRIER STATES

—	56 ward patients at start of survey		127 patients on day of admission		74 ward patients after 1 week in hospital	
	Nasal swab	Rectal swab	Nasal swab	Rectal swab	Nasal swab	Rectal swab
Coagulase-positive:	23 (41%)	21 (38%)	26 (20%)	22 (17%)	28 (38%)	28 (38%)
No. serotype ac/- ..	16 (29%)	16 (29%)	8 (6%)	6 (5%)	20 (27%)	26 (35%)
Other serotypes ..	7	5	18	16	8	2

TABLE II—ANALYSIS OF SIMULTANEOUS ISOLATION FROM NASAL AND RECTAL SWABS

Total no.	No. with same sero-type	No. both ac/-	Resistance patterns of ac/-					No. with different sero-types
			No. both POCST*	No. both POCCST†	No. nasal/ POCST rectal/ POCCST	No. both POCCS‡	Others	
63	50	43	12	4	15	4	8	13

* POCST, resistant to penicillin, oxytetracycline, chlortetracycline, streptomycin, and tetracycline; sensitive to chloramphenicol and erythromycin.
† POCCST = POCST, except resistant also to chloramphenicol.
‡ POCCS = POCST, except sensitive to tetracycline.

(2) On admission, 20% (26/127) of patients were nasal carriers, compared with 38% (28/74) after one week in hospital.

(3) 17% (22/127) were fæcal carriers on admission, compared with 38% (28/74) after one week in hospital.

(4) 6% (8/127) were carriers of serotype ac/- of nasal origin on admission, compared with 27% (20/74) after one week in hospital.

(5) 5% (6/127) of patients were carriers of serotype ac/- of fæcal origin on admission, compared with 35% (26/74) after one week in hospital.

(6) Residence in hospital resulted in a fall in the prevalence of carriage of all serotypes other than serotype ac/-. This applied to both nasal and fæcal strains.

The results obtained by antibiotic-sensitivity testing of serotype ac/- confirmed the general experience that one week's residence in hospital was associated with a high frequency of infection with cross-resistant strains. But, whereas nasal strains were resistant to penicillin, oxytetracycline, chlortetracycline (aureomycin), streptomycin, and tetracycline, fæcal strains were resistant to these antibiotics and also to chloramphenicol. All strains isolated from patients after one week in the ward were sensitive to erythromycin.

SIMULTANEOUS CARRIAGE IN NOSE AND INTESTINE

Of 63 patients no fewer than 50 were nasal and fæcal carriers at the same time. Of these 50, 43 were carrying serotype ac/-. The resistance patterns of these strains differed considerably. Some nasal and fæcal strains showed the same resistance patterns, while others exhibited different patterns. Indeed, in one group of 15 patients the fæcal strains were resistant to chloramphenicol and 5 other antibiotics; whereas the nasal strains, although resistant to the 5 antibiotics, were sensitive to chloramphenicol (table II).

Discussion

Residence in hospital for one week resulted in an increase in the fæcal carrier-rate from 17 to 38% for coagulase-positive staphylococci and from 5 to 35% for serotype ac/- staphylococci. Hospital infection with serotype ac/- was in all cases an infection with antibiotic-cross-resistant strains. A comparable rise in the nasal-carrier rate also occurred over the same period.

Oeding and Austarheim (1954), in a study of the intestinal content of routine necropsy material, reported the frequent occurrence of staphylococci in patients who had been treated with antibiotics. The predominant serological type in this study was the enterotoxin-producing group abc or III, which appears to be the same as our serotype ac/-.

The frequency with which intestinal infection with serotype ac/- staphylococci is acquired in hospital seems to have a twofold significance. First, it may explain pseudomembranous enterocolitis and diarrhœa starting during the first eight days after partial gastrectomy (*Lancet* 1955b). Secondly it underlines the need to reconsider our ideas about the sources of staphylococcal infection, with particular reference not only to the nasal carrier but also to the fæcal carrier. This change in outlook regarding the sources of infection must inevitably have repercussions on our ideas about the method of transfer of infection and the means of preventing cross-infection.

It seems reasonable to suppose that the "weight" of organisms released to the environment by the fæcal carrier greatly exceeds that of organisms released by the nasal carrier; and this would explain the ease with which staphylococci can be recovered from the hospital air and dust. It also raises the question of the transfer of staphylococci by the fæcal-oral route in the same way as that which is believed to operate in bacillary dysentery and infantile gastro-enteritis.

The tracing of sources of infection in staphylococcal outbreaks is possible only by typing. The value of phage-typing has been established at the academic level. This is time-consuming and specialised work. The method of typing in this investigation has the merit of being within the scope of the clinical pathologist. The only special requirement is the preparation and issue of standard antisera.

Summary

Analysis of staphylococci by serological typing and sensitivity testing has shown that the staphylococcus carrier state of the general community (new admissions to hospital) differed from that of a hospital community.

The general carrier-rate was doubled as a result of hospitalisation.

Nasal carriers of serotype ac/- increased fourfold (from 6 to 27%), while fæcal carriers increased sevenfold (from 5 to 35%).

In hospital practice the fæcal carrier of staphylococci, especially serotype ac/-, seems to play a more important part in communicating staphylococcal disease than has been realised.

We thank Prof. W. J. Tulloch for encouragement; Dr. W. Jamieson for clinical facilities; Mr. H. Lawrence, A.I.M.L.T., for technical assistance; and the Medical Research Council for an expenses grant to one of us (T. S.) for a technician.

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MONILIASIS TREATED WITH PENTAMIDINE

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THE successful treatment of two cases of thrush œsophagitis with hydroxystilbamidine has been reported by Wolff et al. (1955).

In-vitro experiments (Stenderup 1955) have shown that even low concentrations of stilbamidine and pentamidine often prevent the growth of *Candida albicans*. We have therefore tried pentamidine in the treatment of moniliasis and report here the results obtained in three cases. All three patients had chronic malignant disorders, and it is well known that such patients are very susceptible to infection by *C. albicans*.

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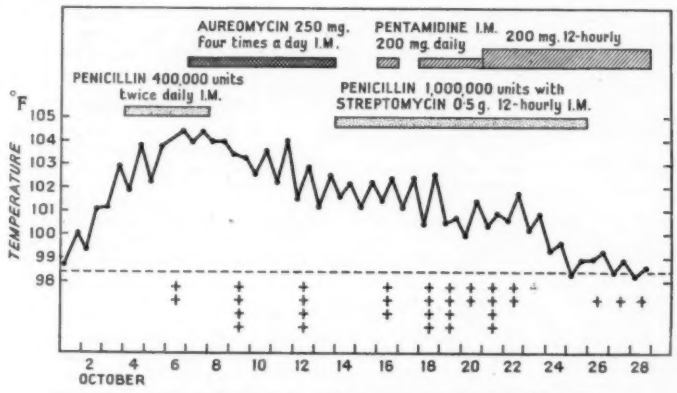

Course and treatment in case 1: each + represents a colony of *C. albicans*.

Case-reports

Case 1.—A man, aged 57, was admitted to hospital on Sept. 14, 1954, with chronic myeloid leukæmia. On Oct. 2 he became febrile and complained of pain in his left flank below the left costal margin on breathing. He had no rigors, cough, or dyspnœa, but produced a little yellowish sputum. Auscultation of his lungs revealed signs of pneumonia, and radiography showed a homogeneous opacity in the upper lobe of his right lung.

Treatment and Course.—Treatment with penicillin, aureomycin (chlortetracycline), and penicillin with streptomycin successively was unsuccessful (see figure); the patient became worse and cyanosis and dyspnœa developed. Repeated bacteriological studies of the patient's sputum failed to reveal any pathogenic bacteria but showed increasing numbers of colonies of *C. albicans* until they were present in almost a pure growth. Therefore a course of intramuscular pentamidine 200 mg. daily was started on Oct. 16. By mistake no pentamidine was given next day, but from Oct. 18 daily injections were given. The response not being satisfactory after the first few days' treatment, the dose was increased to 200 mg. twelve-hourly on Oct. 21. This led to rapid clinical improvement, and four days later the patient's temperature had returned to normal. Daily mycological study of the sputum showed that the number of colonies of *C. albicans* decreased with the fall in temperature (see figure). Pentamidine was given for the last time on Oct. 28, and on Nov. 3 no fungi could be isolated from the sputum.

In-vitro studies of the patient's strain of *C. albicans* showed that pentamidine in a concentration of 1/512 mg. per ml. of substrate partially inhibited growth, and 1/128 mg. per ml. of substrate completely suppressed macroscopic growth (for technique see Stenderup 1955).

Case 2.—A man, aged 25, was admitted to hospital on May 27, 1955, with Hodgkin's disease of three years' duration. During this period his condition had become progressively worse. During his stay in hospital he complained of feeling as if he had a lump in his throat and of retrosternal pain in swallowing. Inspection of the throat revealed a white membrane covering the pillars of the fauces and the posterior wall of the nasopharynx, from which *C. albicans* was isolated. Radiography of the œsophagus showed no abnormalities.

Treatment and Course.—The symptoms were thought to be due to monilial infection extending into the œsophagus; so treatment with intramuscular pentamidine 200 mg. daily was started on July 9. Œsophagoscopy a few days later showed that the hypopharynx and the upper part of the œsophagus were covered with a dense white fungous membrane, and the underlying mucosa was red and œdematous and tended to bleed. Since the mucosa seemed to be very friable, the œsophagoscope was introduced for a distance of only 20 cm. Culture of a biopsy sample yielded a heavy pure growth of *C. albicans*. During pentamidine therapy the discomfort of the throat rapidly subsided, and after twelve days' treatment both the faucial coatings and discomfort had disappeared completely. Pentamidine was therefore discontinued, and œsophagoscopy showed that the entire œsophagus was almost normal. The mucosa was perhaps slightly swollen, and a few pinhead-sized plaques persisted from which *C. albicans* could still be isolated.

Case 3.—A man, aged 35, had had Hodgkin's disease from the age of 8 years and had been given large doses of X rays to enlarged lymph-nodes of the head and neck. After a course of irradiation in 1953 he complained of dryness and burning pain in his mouth. His oral, lingual, and pharyngeal mucosa became atrophic, with a tendency to the formation of crusts, purulent secretion, and hæmorrhages. These changes persisted and caused him great discomfort, and he was admitted to hospital on Sept. 9, 1955.

On admission he was critically ill, very weak, and anæmic. He complained of the aforesaid symptoms in his mouth and throat and of white coatings in his mouth, which had lasted a couple of months and caused him considerable discomfort. He had difficulty in swallowing and thought he had lost weight.

Examination revealed that his entire oral mucosa, his tongue, the pillars of his fauces, and his pharyngeal wall were completely covered with a thick yellowish membrane, and his breath was offensive. Œsophagoscopy showed that this membrane was present all over the œsophageal mucosa right down to the cardia. Culture of the membrane grew *C. albicans*, *C. pseudotropicalis*, and *C. krusei*. In-vitro studies showed that pentamidine in a concentration of 1/512 mg. per ml. of substrate suppressed the growth of all three species.

Treatment and Course.—From Sept. 8 intramuscular pentamidine 200 mg. twelve-hourly was given. After a week's treatment only scattered plaques remained on the oral and pharyngeal mucosa. Œsophagoscopy on Sept. 15 showed that the œsophagus was still covered by a membrane, which, however, was less adherent; the underlying mucosa was red and inflamed and tended to bleed. Pentamidine therapy was therefore continued. The general condition of the patient deteriorated, and the symptoms due to the state of the mucosa did not subside, even though the monilial infection decreased. On the morning of Sept. 21 the patient was found unconscious in bed, and he died a few hours later.

Necropsy revealed extensive granulomatous change in the spleen, liver, and lymph-nodes, probably due to atypical Hodgkin's disease. No membranes on the hypopharynx and œsophagus were visible to the naked eye. The œsophageal mucosa was red and atrophic, and microscopy revealed chronic œsophagitis. Scattered fragments of mycelium and candida spores were still present.

The objective improvement of the moniliasis, despite the deterioration of the general health and the poor condition of the oral and pharyngeal mucosa, seems remarkable and must be ascribed to the treatment with pentamidine.

Discussion

In view of the good results obtained with pentamidine in these cases and with hydroxystilbamidine in the cases of thrush œsophagitis reported by Wolff et al. (1955) the diamidines must be assumed to be useful in the treatment of moniliasis.

The effects were not obtained in the present cases so quickly as in those treated by Wolff et al. This may be due to the fact that these workers administered the drug intravenously. Hydroxystilbamidine may also exert a greater effect than pentamidine does on *C. albicans*, but it is scarcely possible to be definite about this, because different strains of *C. albicans* may differ in sensitivity even to the same diamidine.

Summary

Three cases of moniliasis were successfully treated with pentamidine.

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THE EFFECT OF 3 : 5 : 3′-TRIBROMO-DL-THYRONINE IN MYXŒDEMA

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IT has been shown (Mussett and Pitt-Rivers 1954) that DL-tribromothyronine possesses considerable activity in preventing thiouracil-induced goitre in rats. In these experiments it was found to be nearly half as active as DL-thyroxine, while DL-tetrabromothyronine only had about 1/200 of the activity of thyroxine. Tetrabromothyronine has previously been shown to have some thyroxine-like activity in man (Lerman and Harington 1949). It is possible, however, in view of the 100-fold difference in the goitre-preventing activity of tribromothyronine and tetrabromothyronine, that the response in human myxœdema obtained by Lerman and Harington may have been, in part, due to contamination of the tetrabromo compound with tribromothyronine. In the present study the tribromothyronine used was demonstrated to be chromatographically free from the tetrabromo compound.

This study was not undertaken in anticipation of any therapeutic advantage of tribromothyronine over other thyroxine analogues but because the demonstration of high thyroxine-like activity of non-iodine-containing analogues of thyroxine in man must cause a reorientation of fundamental views of thyroid physiology.

Two myxœdematous patients have now been treated with tribromothyronine.

Case-reports

Case 1.—A man, aged 68, was first seen as an outpatient on Dec. 17, 1954. He complained of swelling of the hands and feet and of "big bladders" around the eyes for three weeks. He admitted to excessive lethargy, rising weight, constipation, coldness and pins-and-needles in the legs, "thickness" of the voice, and increasing deafness for a few months. The history was amplified by his wife, who stated that for two years, since giving up his work as a butcher, he had become progressively more slow in all his activities. He had tended to fall asleep at the slightest opportunity and spent his day huddled over the fire.

Examination.—When admitted to the Royal Free Hospital on Dec. 30, his appearance was typical of myxœdema. His responses were slow but there was no suggestion of psychosis. His voice was very low-pitched and rasping. His features were coarse, his skin thickened and dry. He had supraclavicular pads. His scalp hair was normal, but his eyebrows were deficient. He had pitting œdema of the hands, feet, and ankles. His mucosæ were normal. No thyroid tissue was palpable. His pulse-rate was 64, pulse regular, blood-pressure 180/105 mm. Hg; there were no signs of congestive heart-failure, and no abnormality was found on examination of the heart. The lungs, abdomen, and central nervous system were normal.

On clinical grounds a diagnosis of primary myxœdema was made.

Investigations

The basal metabolic rate (B.M.R.) was −34% (Aub-Du Bois) and the blood-cholesterol level 300 mg. per 100 ml. The uptake of radioactive iodine was subnormal, only 9% of the dose being taken up in the neck at twenty-four hours. Radiography of the chest showed cardiac enlargement, with normal lung fields. Hæmoglobin 13·3 g. per 100 ml. (90%); no morphological abnormality of blood-cells; generalised hypoplasia in bone-marrow. Electrocardiography showed sinus rhythm, normal voltage, q R S 0·13 sec., and left bundle-branch block.

Treatment and Progress

Treatment with tribromothyronine was begun on Jan. 13, 1955. In view of the patient's age and electrocardiographic evidence of degenerative heart-disease very small doses (100 μg.) of intramuscular tribromothyronine were used initially and gradually increased to 1000 μg. This dosage was also indicated because the degree of thyroxine-like activity that tribromothyronine might prove to have in man was unknown.

Progress was judged clinically, by B.M.R., by blood-cholesterol levels, by weight changes, and by fluid balance. The dosage of tribromothyronine and other data are recorded in fig. 1.

Soon after the start of treatment the patient stated that he felt better and he became increasingly alert and active. His voice, by the end of the period of study, was normal, and hearing had improved. His B.M.R. had risen from −34% to 0%, his blood-cholesterol level had fallen from 300 mg. to 144 mg. per 100 ml., and his weight from 159½ lb. to 138 lb. There was a period from five to ten days after the start of treatment when his weight increased temporarily in association with increasing œdema of the legs.

Fig. 1 shows that about four weeks after the start of treatment the character of the fluid-balance chart alters. At that time, and for three weeks subsequently, the patient's fluid intake was equalled by his urinary output. Although dietary fluid and insensible fluid loss have not been included in the fluid balance, probably during this period he was in a negative fluid balance owing to a diuresis.

Treatment with tribromothyronine was discontinued on March 30 and he has since then been maintained on thyroid gr. 4 daily. During a further three months' observation he has remained clinically normal, his weight has been steady, and his B.M.R. has remained in the normal range.

Case 2.—A man, aged 65, was admitted to the Hampstead General Hospital as an emergency on Jan. 16, 1955. On the

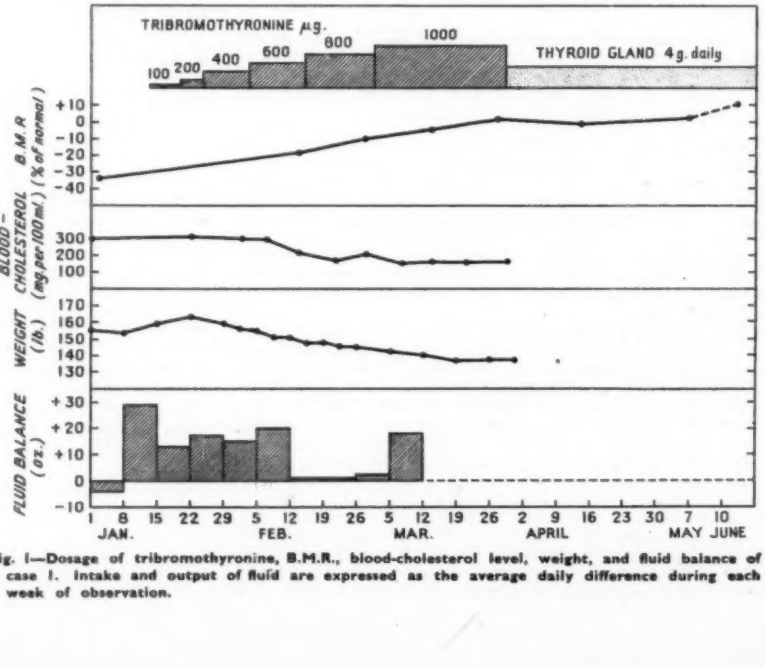
TRIBROMOTHYRONINE μg.
100 200 400 600 800 1000
THYROID GLAND 4 g. daily
BLOOD-CHOLESTEROL (mg. per 100 ml.)
B.M.R. (% of normal)
+10 0 -10 -20 -30 -40
300 200 100
WEIGHT (lb.)
170 160 150 140 130
FLUID BALANCE (oz.)
+30 +20 +10 0 -10
1 8 15 22 29 5 12 19 26 5 12 19 26 2 9 16 23 30 7 10
JAN. FEB. MAR. APRIL MAY JUNE

Fig. 1—Dosage of tribromothyronine, B.M.R., blood-cholesterol level, weight, and fluid balance of case 1. Intake and output of fluid are expressed as the average daily difference during each week of observation.

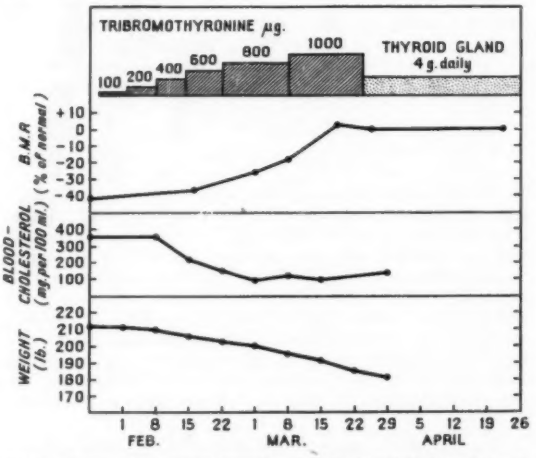
TRIBROMOTHYRONINE μg.
100 200 400 600 800 1000
THYROID GLAND 4 g. daily
B.M.R. (% of normal)
+10 0 -10 -20 -30 -40
BLOOD-CHOLESTEROL (mg. per 100 ml.)
400 300 200 100
WEIGHT (lb.)
220 210 200 190 180 170
1 8 15 22 1 8 15 22 29 5 12 19 26
FEB. MAR. APRIL

Fig. 2—Dosage of tribromothyronine, B.M.R., blood-cholesterol level, and weight in case 2.

morning of admission he had suddenly become confused and lost consciousness for an hour. On admission he had dysphasia in association with mild pyramidal-tract signs on the right side. He also appeared myxœdematous. At first it was impossible to obtain a history, but after a few days and with the help of his wife the following history was obtained. For some years he had been becoming increasingly lethargic both physically and mentally. He had gained much weight. His eyes had been puffy for a year, and his voice gruff for many years. He had recently felt the cold excessively.

Examination

His scalp hair was coarse and sparse and his eyebrows were thin. His voice was typically myxœdematous. He was deaf and had been so since middle life, but his deafness had increased in the last few years. There was no clinical evidence of anæmia. No thyroid tissue was palpable. The pulse-rate was 66, and the blood-pressure 140/100 mm. Hg. The apex-beat could not be localised; the heart sounds were distant, but no other abnormality was detected. The chest and abdomen were normal. There was pitting œdema of the legs.

On clinical grounds a diagnosis of primary myxœdema was made.

Investigations

The B.M.R. was −40% (Aub-Du Bois), and the blood-cholesterol level 356 mg. per 100 ml. There was no uptake of radioactive iodine in the neck in twenty-four hours. Radiography of the chest showed moderate cardiac enlargement. Electrocardiography showed sinus bradycardia (54 per min.), low-voltage Q R S complexes, flattened P waves in all leads, and flattened or inverted T waves in all leads. Hb 87%; packed-cell volume 41 mm.; generalised hypoplasia of bone-marrow with no morphological abnormality.

Treatment and Progress

Treatment with intramuscular tribromothyronine 100 μg. daily was begun on Jan. 27, and the dose was gradually increased to 1000 μg. daily.

Progress was assessed clinically, by B.M.R., by blood-cholesterol levels, and by weight changes (fig. 2). There was a temporary increase in œdema for the two weeks following the start of the treatment. Under treatment with tribromothyronine this patient's B.M.R. rose from −41% (Aub-Du Bois) to +2%, his serum-cholesterol level fell from 356 to about 100 mg. per 100 ml., and his weight decreased from 212½ lb. to 185 lb.

On March 24 treatment with tribromothyronine was stopped and the patient was given tab. thyroid *B.P.* gr. 4 daily. A month later the B.M.R. was still normal and his clinical state satisfactory. Further observations were impossible, because this patient died after a road accident.

Comment

From these results it is apparent that DL-tribromothyronine in a dose of 1 mg. daily can restore normal metabolism in myxœdema. In the two present cases normality was maintained, after treatment with tribromothyronine had been stopped, with thyroid gr. 4 daily; but owing to the death of the second patient the follow-up was not long enough to establish that dosage as being the permanent requirement. If this dosage is indeed equivalent to 1 mg. of tribromothyronine, it appears that 1 mg. of DL-tribromothyronine is equivalent to 0·4 mg. of L-thyroxine (the quantity contained in gr. 4 of desiccated thyroid).

One may reasonably assume from previous published evidence that the D-isomer in DL-tribromothyronine is virtually inactive in human myxœdema. It therefore appears that tribromothyronine has only slightly less activity than thyroxine itself, since 1 mg. of the DL-compound (containing 500 μg. of the L-isomer) had activity equivalent to gr. 4 of desiccated thyroid.

Conclusions

Two patients with primary myxœdema were treated with DL-tribromothyronine.

Both patients responded fully to a daily dose of 1 mg. of this compound.

Tribromothyronine appears to have only slightly less thyroid-like activity than has thyroxine.

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SICKLE-CELL/HÆMOGLOBIN-D DISEASE IN A MULATTO GIRL

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SICKLE-CELL anæmia is a well-known congenital and familial hæmolytic anæmia, first described by Herrick (1910) in a West Indian Negro from Granada. For many years it was considered to be peculiar to Negroes, but it occurs also among peoples in whom no negroid ancestry is apparent (Cooley and Lee 1929, Lehmann and Cutbush 1952, Choremis et al. 1953).

It owes its name to the peculiar shape assumed by the erythrocytes under reduced oxygen tension, when the hæmoglobin inside the cells does not remain in solution (Perutz et al. 1951), and the resultant "crystallisation" or "gelling" is responsible for the characteristic deformity.

The hæmoglobin inside the sickle-cells differs from normal hæmoglobin both in its solubility under reduced oxygen tension (Singer and Singer 1953) and electrophoretically (Pauling et al. 1949, Wells and Itano 1951). This abnormal hæmoglobin is called hæmoglobin S. The terminology used here for the various types of hæmoglobin is that recommended by the National Institutes of Health (1953).

Neel (1947, 1949, 1951) has shown that hæmoglobin S is inherited as a mendelian dominant, and he has postulated heterozygous and homozygous genes to explain symptomless sickle-cell trait and the true sickle-cell anæmia. If an individual receives the hæmoglobin-S gene from one parent only (the heterozygous state), he

Fig. 1—Ulceration of patient's ankles.

will have the harmless sickle-cell trait; whereas if a hæmoglobin-S gene is received from each parent (the homozygous state), then the individual will suffer from sickle-cell anæmia. Sickle-cell trait is very much more common than sickle-cell anæmia and occurs in 5–40% of Negroes (Jelliffe et al. 1954).

Neel (1951) recognised that there were occasional exceptions to his hypothesis—for example, cases of sickle-cell anæmia in which the erythrocytes of only one parent sickled. Further study of these exceptional cases has disclosed two other abnormal inherited hæmoglobins (C and D) and shown that the inheritance of hæmoglobin S from one parent and either hæmoglobin C (Itano and Neel 1950, Kaplan et al. 1951, 1953, Neel et al. 1953) or hæmoglobin D (Itano 1951, Dacie 1954) from the other produces a condition clinically very similar to sickle-cell anæmia.

We report here a case of sickle-cell/hæmoglobin-D disease.

Case-report

A single woman, aged 32, attended surgical outpatients with ulceration of her ankles (fig. 1). She was a mulatto with an English mother and was also said to have sickle-cell anæmia.

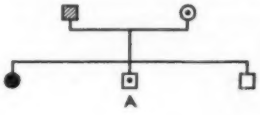
Examination of her blood showed anæmia (Hb 60%=8·7 g. per 100 ml.). Her erythrocytes sickled readily into the long filamentous forms typical of sickle-cell anæmia (fig. 2). Fresh wet marrow flecks showed mycelia-like filaments (fig. 3) similar to those described by Vandepitte and Louis (1953). The electrophoretic pattern of her hæmoglobin was indistinguishable from that seen in sickle-cell anæmia.

Family History

Thus both clinically and hæmatologically the case appeared to be one of true sickle-cell anæmia in a girl of mixed African and English descent (Stewart and MacIver 1954), but her family history (fig. 4) was most unusual. Her deceased father was a West African Negro; so we assume that he was the source of the patient's hæmoglobin-S gene. Her mother was English, and had no known foreign antecedents. Her blood-count was normal and her erythrocytes did not sickle. The patient's two brothers also had normal blood-counts, and their erythrocytes did not sickle. The sickle test was made by three different methods—plain wet sealed, 2% sodium metabisulphite, and 2% sodium dithionite—and at least six preparations were made for each member of the family. Only in the patient was the sickle test positive.

Filter-paper electrophoresis of hæmoglobin solutions from all surviving members of the family was done with the vertical tank of Flynn and de Mayo (1951) and a barbitone buffer pH 8·6 at 220 V and 6 mA for 20 hours. The results are shown in fig. 5, including normal and abnormal controls run at the same time. It will be seen that the mother and the brother A have an abnormal band of hæmoglobin of reduced mobility compared with normal hæmoglobin. Density scanning of the strips indicates that about half of each type of hæmoglobin is present in the samples. The patient's hæmoglobin gave a single abnormal band of similar mobility to the abnormal hæmoglobin of her mother and her brother A. In the other brother a normal hæmoglobin pattern was found.

The patient's hæmoglobin was of the same electrophoretic mobility as hæmoglobin S. This can be interpreted as showing that her hæmoglobin is either of this type alone or mixed with hæmoglobin D, which is the only type so far known to be of the same electrophoretic mobility as hæmoglobin S. The electrophoretic pattern in the mother and brother A also shows a band in the S and D position, but their erythrocytes do not sickle.



A See text
● Patient; sickle test positive
▨ Not examined (dead)
⊙ Sickle test negative: electrophoresis shows abnormal hæmoglobin
○ Sickle test negative: electrophoresis shows normal hæmoglobin

Fig. 4—Patient's family tree (see text).

Any erythrocytes containing 50% of hæmoglobin S will sickle readily by any of the methods which we used. Therefore this abnormal hæmoglobin must be hæmoglobin D.

We are indebted to Dr. J. C. White, of the Postgraduate Medical School of London, for the following report on the solubility of a hæmoglobin sample from the patient's mother:

"The solubility of the reduced hæmoglobin was determined in pH 6·7 phosphate buffer, ionic strength 4·75. In a system containing 10 g. per litre of protein, the solubility was 5·7 g. per litre. The hæmoglobin-D trait which I examined (Dacie 1954) gave a result of 6·0 g. per litre. These values are below the normal mean, though in the lower normal range, but are far higher than for sickle-cell trait under the same conditions

Fig. 2—Moist sealed preparation of peripheral blood showing filamentous sickling (×470).

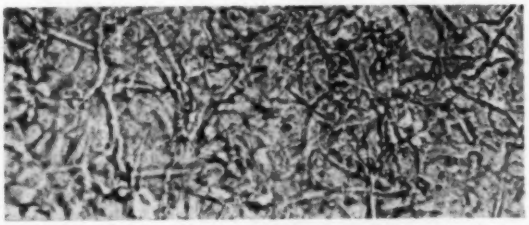


Fig. 3—Moist sealed preparation of bone-marrow fleck showing the long mycelia-like structures (×470).

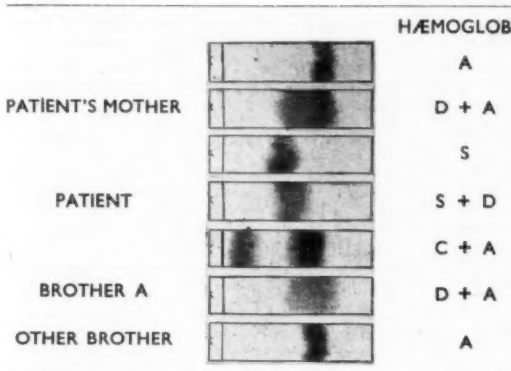


Fig. 5—Filter-paper electrophoresis of different hæmoglobins run in parallel.

(1–3 g. per litre). Together with the electrophoretic result of a normal hæmoglobin fraction and a fraction with the mobility of hæmoglobin S, this fully confirms that the patient's mother has hæmoglobin-D trait."

Discussion

Sickle-cell anæmia is usually due to a homozygous gene for hæmoglobin S—in other words, both parents of a patient with sickle-cell anæmia usually possess this abnormal gene at least in the heterozygous state (Neel 1947, 1949, 1951). In the present case we must assume the inheritance of the gene for sickling from the father, both because he was a West African Negro and because the mother did not have hæmoglobin S. Since there was no normal hæmoglobin (hæmoglobin A) in the patient's erythrocytes, the mother must have passed on the gene for the only abnormal hæmoglobin which she possessed —hæmoglobin D. Therefore the hæmoglobin in the patient's erythrocytes must be a mixture of hæmoglobins S and D. The electrophoretic pattern of her hæmoglobin is compatible with this hypothesis.

Fig. 6—Whole spleen obtained at necropsy (actual size).

We have previously discussed the criteria to be fulfilled before sickle-cell anæmia can be definitely diagnosed (Stewart and MacIver 1954). The patient satisfied all these criteria both hæmatologically and clinically. Subsequently she was readmitted in extremis, and necropsy revealed pyelonephritis. The changes in the other organs were as described for sickle-cell anæmia (Wintrobe 1951). In particular the spleen (fig. 6) was very shrunken and measured only $1^3/_4 \times 1/_4 \times 3/_4$ in.

It is therefore evident that electrophoretic analysis of the hæmoglobin types present both in patients and their parents is necessary before a diagnosis of true sickle-cell anæmia can be made.

Summary

A woman with sickle-cell/hæmoglobin-D disease inherited the abnormal hæmoglobin D from her English mother. The father, a West African Negro, was dead and is assumed to have supplied the gene for the hæmoglobin S. One of the patient's brothers had also inherited the abnormal hæmoglobin D.

This case emphasises the importance of investigating obscure hæmolytic anæmias for the presence of abnormal hæmoglobins.

We wish to thank Prof. A. Kekwick, under whose care the patient was admitted, for allowing us access to the case and for permission to publish; Miss H. Silberman for the electrophoretic studies; and Dr. P. Harrison-Hall for the post-mortem report.

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Preliminary Communication

WILSON'S DISEASE
NEW ORAL THERAPY

IN patients with hepatolenticular degeneration (H.L.D.) there is an accumulation of excess copper in the tissues and an abnormally high excretion of copper in the urine. The extensive literature on this subject has been reviewed and discussed by Cartwright et al.[1] It has been shown by Cummings [2] and many subsequent workers that the excess copper in these patients can be mobilised by the parenteral administration of dimercaprol (BAL); intravenous 'Versene' and intravenous amino-acids are also effective,[1 3] and cortisone and high-protein diets have been found of value as adjuvant therapy.[4] Dimercaprol has proved the most effective of these forms of treatment and if given over long periods causes distinct clinical improvement, particularly in patients with the more chronic forms of the disease.[5] However, repeated injections of dimercaprol are extremely painful and are often associated with undesirable side-reactions, so not all patients can benefit from this form of treatment.

The object of the present investigation has been to find a non-toxic compound that could be given by mouth and would promote the excretion of copper. The activity of dimercaprol is due to the presence of two thiol groups in the molecule; these compete with the thiol groups in the tissues for the excess copper which is present; and the dimercaprol-copper complex is then excreted in the urine. Some earlier work [6] has suggested that penicillamine (β, β-dimethyl-cysteine) is excreted in the urine after parenteral administration of penicillin. Since this compound is excreted in the reduced (–SH) state after being formed in the body it appeared possible that it would also remain reduced when given by mouth and that the thiol group might prove active in the removal of copper.

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2. Cummings, J. N. *Brain*, 1951, **74**, 10.
3. Matthews, W. B., Milne, M. D., Bell, M. *Quart. J. Med.* 1952, **21**, 425.
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5. Denny Brown, D., Porter, H. *New Engl. J. Med.* 1951, **245**, 917.
6. Walshe, J. M. *Quart. J. Med.* 1953, **22**, 483.

So far two healthy people have each received a single dose, and two patients with H.L.D. have received four and three trial doses, of penicillamine. The copper excretion has been estimated and, in the patients, compared with that produced by a dose of dimercaprol containing an approximately equimolar amount of sulphur. These preliminary tests suggest that dimethyl cysteine is as active as dimercaprol in promoting the removal of copper from the body. Dimethyl cysteine hydrochloride was given as three daily doses each of 300 mg.; the drug was given about half an hour before meals in order to avoid its chelating with copper present in the diet. In these short-term experiments no toxic reactions were observed.

A detailed report of this work is in course of preparation, and the possible use of this form of treatment for long-term maintenance of patients with H.L.D. is discussed with reference to possible chronic toxicity and precautions which should be taken in undertaking a long-term study. Reference is also made to the treatment of other heavy metal poisonings with penicillamine.

This work was done at the Thorndike Memorial Laboratory and the 2nd and 4th Medical Services (Harvard), Boston City Hospital, and the Department of Medicine, Harvard Medical School, Boston, Massachusetts. I am most grateful to Dr. C. S. Davidson for his advice and encouragement; to Dr. D. Denny Brown for allowing me to study two of his patients; and to Dr. Augustus Gibson, of Merck & Co., Rahway, N.J., and to Prof. John Sheehan, of the Massachusetts Institute of Technology, for supplies of penicillamine.

Medical Unit, University College Hospital Medical School, London, W.C.1

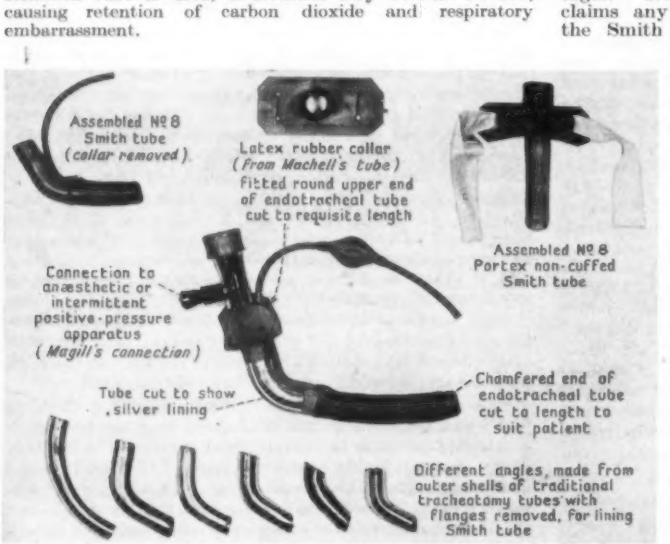
J. M. WALSHE
M.A., M.B. Camb., M.R.C.P.

New Inventions

A TRACHEOTOMY TUBE FOR USE IN ACUTE POLIOMYELITIS

THE maintenance of a tracheotomy tube during emergencies may lead to many difficulties, especially before the tracheostomy tract has properly formed:

Fixation.—The normal movements of patient and attachments with intermittent positive-pressure inflation, routine posturing, and drainage may easily displace an ordinary cut-down anæsthetic endotracheal tube which may cause surgical emphysema and traumatic pneumothorax. If a long-stemmed tube is used, a bronchus may become blocked, causing retention of carbon dioxide and respiratory embarrassment.


Assembled No 8 Smith tube (collar removed)
Latex rubber collar (From Machell's tube)
Fitted round upper end of endotracheal tube cut to requisite length
Assembled No 8 Portex non-cuffed Smith tube
Connection to anæsthetic or intermittent positive-pressure apparatus (Magill's connection)
Tube cut to show silver lining
Chamfered end of endotracheal tube cut to length to suit patient
Different angles, made from outer shells of traditional tracheotomy tubes with flanges removed, for lining Smith tube

Kinking.—Complete occlusion of the lumen of a tracheotomy tube may be more obvious, but no more lethal, than partial occlusion, which may often be produced in anæsthetic tubes; even armoured tubes may close partially in the antero-posterior diameter. This may be detected before use by trying to withdraw a suction catheter (which has previously just passed easily); if it is gripped when the tube is bent, the latter should be discarded.

Tracheal Ulceration.—In debilitated patients direct pressure of an inflated cuff may cause ischæmia of the tracheal mucosa; and a tube without a rigid angle may rub the posterior tracheal wall owing to its relative inflexibility.

Angulated rubber tracheotomy tubes (Morrant Baker) may be the best of those tubes readily available for use with intermittent positive-pressure inflation, and, carefully selected to suit the patient, are unlikely to kink. However, the short intratracheal portion of these tubes, especially in the smaller sizes, does not allow easy fixation of slip-on cuffs, which in any case are clumsy and unsuitable for prolonged use. Moreover the fixation of connections to the flush external flange is difficult, especially when surgical dressings are present, as in the early postoperative stages. Some rubber tubes are of inconstant diameter, having an irregular inner wall which prevents the easy passage of a suction catheter.

In the Portsmouth Poliomyelitis Centre a tracheotomy tube has been improvised by several members of the staff jointly which appears to have none of the aforementioned disadvantages and many additional advantages. None of us accepts full responsibility or claims any originality for this tube; so we call it the Smith tube after the first patient in whom it served as a reliable non-traumatic airway during many days of intermittent positive-pressure inflation.

The Smith tube is essentially a suitably selected and cut-down anæsthetic endotracheal tube into which is slid, to make a tight fit, a similarly selected silver lining, which is the outer shell of a standard silver tracheotomy tube from which the external flange has been removed. In the accompanying illustration the wall has been cut away from a Smith tube to show the lining. A latex rubber collar is attached.

The advantages of the Smith tube are as follows:

(1) The fixed curve and attached collar make fixation easy and reliable.

(2) The tube cannot be compressed or occluded in any diameter.

(3) A smooth and regular inner wall allows the passage of the largest possible suction catheter at all times.

(4) The fixed curve ensures that there is no pressure on the posterior tracheal wall.

(5) Variable intratracheal and extratracheal lengths can be selected (above and below angle) to suit the portion of trachea available above the carina, and to make easy connection with anæsthetic or intermittent positive-pressure apparatus.

(6) The Smith tube can be made of different sizes, lengths, shapes, and lumina and cuffed or uncuffed from ready-to-hand materials at low cost.

R. J. HAMER HODGES
F.F.A. R.C.S., D.A.
ROBERT MORLEY
F.R.C.S.E.
W. B. O'DRISCOLL
M.B. N.U.I.
IAN MCDONALD
M.B. Melb., D.A.

Portsmouth Poliomyelitis Centre

Reviews of Books

Biochemistry and the Central Nervous System

HENRY MCILWAIN, PH.D., D.SC., professor of biochemistry in the University of London at the Institute of Psychiatry. London: J. & A. Churchill. 1955. Pp. 240. 40*s*.

TODAY emphasis in biochemical thought is on the nature of dynamic processes rather than on mere cataloguing of tissue constituents, which was the preoccupation of earlier workers; and Professor McIlwain's book gives a striking illustration of this trend. He discusses most of the important topics of current interest in cellular metabolism, and skilfully develops the basic ideas in relation to the special case of nervous tissue. It is remarkable how much data he has assembled to demonstrate the actual behaviour of neural material without having to extrapolate from other organs. Professor McIlwain's own work on the effect of electrical stimulation on the "in-vitro" metabolism of cerebral tissues receives due consideration, but is not overemphasised, and in this and other respects his presentation is extremely well balanced.

After a brief historical introduction, there is a chapter on the study of cerebral metabolism in the intact animal, which summarises work on the oxygen and glucose consumption of the organ under various conditions, based on analyses of affluent and effluent blood. Next comes a discussion of the chemical composition of the brain with particular reference to the constituents, such as creatine phosphate, whose concentration varies with cerebral activity. The middle five chapters of the book are concerned with a straightforward account of intermediary metabolism. The chapter on lipids reviews recent work on the fractionation of the cerebral lipids, and on turnover studies of these materials. There follows a fascinating chapter on the changes in the make-up of the brain through development before and after birth. An account of chemical transmitters and the in-vitro effects of depressant and excitatory drugs on brain metabolism leads to a final chapter on the speed of chemical changes in the brain, which includes some intriguing calculations made by the author from various published data on this subject.

Written in a style that is unexciting but usually perfectly clear, the book will attract workers in neurology and psychiatry who want to keep up with the results of modern biochemical research; and biochemists and neurochemists will find that it gives a useful conspectus of familiar ideas.

Blood Supply and Anatomy of the Upper Abdominal Organs

NICHOLAS A. MICHELS, M.A., D.SC., professor of anatomy, Jefferson Medical College, Philadelphia. Philadelphia: J. B. Lippincott. London: Pitman Medical Publishing Co. 1955. Pp. 581. £8.

THIS book is mainly concerned with the variations of the arterial supply to those organs which lie above the mesentery of the transverse colon.

In part, it is a descriptive atlas of 165 figures, most of which illustrate these variations. The essential features of the figures dealing with the gall-gladder and liver are summarised in six plates. Other figures show variations of the extrahepatic bile-ducts, and the remainder illustrate the gross anatomy of the intrahepatic biliary, arterial, and venous systems.

The atlas is preceded by a text which includes descriptions of the arterial variations, based on some 500 dissections by the author. Accounts are also included of the blood-supply of the œsophagus and the gut distal to the duodenum. These are derived from the observations of others, but supplemented by Professor Michels's own experience. There are discussions on collateral circulations in the upper abdomen and on the circulations within the liver and the spleen. The text ranges widely over other material, and includes a chapter on the variations of the biliary system. A vast composite chapter deals with the structural features, embryology, and anomalies of the upper abdominal organs. Here the main emphasis is on the biliary apparatus, and the structure of the lower end of the common bile-duct is dealt with in detail. There are sections in this chapter on gall-stones, on the comparative anatomy of the bile-ducts, on the liver in relation to divination, and on the first cholecystectomy performed in America. There is a bibliography of some 850 references; many more given in the text do not appear in it.

The emphasis throughout is on the applied anatomy, and this is essentially a book intended for those who operate on the upper abdominal organs. The terminology is clear, and the figures are admirably designed and executed; few surgeons could fail to learn something of value by looking through the atlas. The text is in general clearly written and comprehensive, though there are some repetitions and irrelevancies. The general production is good; the price is frightening.

Techniques in Blood Grouping

IVOR DUNSFORD, senior scientific officer, Regional Blood Transfusion centre, Sheffield; C. CHRISTOPHER BOWLEY, M.B., M.R.C.O.G., director of the centre. Edinburgh: Oliver & Boyd. 1955. Pp. 250. 21*s*.

PRIMARILY a practical guide for use in the laboratory, this book concentrates on providing, in full detail, "a comprehensive set of techniques needed by those engaged in blood grouping work."

The first of the three sections explains briefly the theoretical and factual bases on which the practical schemes rest, and even in this section, the practical standpoint predominates. For instance, in addition to dealing with the nature of immune iso-antibodies and factors affecting blood-group reactions, the authors have chapters on apparatus, causes of error, and the provision of antisera. There is an interesting brief outline of basic and advanced courses for hospital laboratory workers.

The second section gives really full details of 80 different techniques, beginning very properly with the cleaning of dirty glassware and ending with the identification of mixed antibodies. In between every technique likely to be needed is thoroughly described: the basic grouping techniques, the preparation of sera for diagnostic use, the differentiation of the sub-groups of A (with a useful table), and more complex matters like rhesus genotyping. Techniques for difficult situations—compatibility tests for children under 6 months, compatibility tests when time presses, and the investigation of cases of hæmolytic anæmia—are presented with commendable briefness. The rare blood-groups are all dealt with—but with a sense of proportion. The rare blood-groups also find a place in the third section, which is a useful glossary.

The book has a wire binding that enables it to lie flat wherever it is opened.

This book will be welcomed with relief by all those who have to cope with the practical side of blood-transfusion work, but who have only the haziest ideas about the calculation of gene frequencies. The price will enable every worker to have his own copy.

Introduction to Hepatic Surgery

HENRY GANS, M.D., surgical resident, Cincinnati, Ohio. New York: Elsevier. London: Cleaver-Hume. 1955. Pp. 265. 70*s*.

For his study of the anatomy of the Glissonian and the hepatic vein systems, Dr. Gans cast the vessels in plastic material by injecting post-mortem specimens. These casts have indicated a fairly constant lobe system within the liver which does not entirely correspond with the external appearances of the organ; some fine photographic reproductions illustrate this point, which is of importance to a surgeon contemplating partial hepatectomy. Because of the anatomical detail and the technological style in which it is written, this book is more for reference than for reading. Surgery is dealt with in general terms; physiology is not considered.

Fractures of the Facial Skeleton

N. L. ROWE, M.R.C.S., F.D.S. R.C.S., and H. C. KILLEY, M.R.C.S., F.D.S. R.C.S., consultants in oral surgery, plastic and maxillofacial surgery unit, Rooksdown House, Basingstoke. Edinburgh: E. & S. Livingstone. 1955. Pp. 923. £6.

THE two principal authors of this imposing textbook are primarily dental surgeons, and they have been assisted by two anæsthetists, four plastic surgeons, an

ophthalmologist, and an oral surgeon. This team has produced a splendid volume that covers virtually every aspect of maxillofacial injuries—a difficult and complex subject.

Many clinical problems are fully explained and illustrated, including gunshot wounds, head injuries, secondary bone-grafts and soft-tissue lacerations; and the technical matters discussed include the construction of metal cap splints and the various methods of interdental wiring. There is an admirably terse chapter by Dr. G. J. Romanes on ophthalmic injuries, though in face of this contribution it is a pity to find support elsewhere for the fallacy that loss of periorbital fat causes "an alteration of the pupillary level and a complaint of diplopia." Best of all, there is a fascinating chapter on the diagnosis and treatment of residual traumatic deformities by Sir Harold Gillies.

An encyclopædic book is liable to lack balance, and some of this work's copiousness is due to material which might well be compressed or omitted. The historical chapter runs to 50 pages, there is a long section on metallurgy and electrolytic phenomena, the chapter on radiography and radiology occupies 46 pages, and there are over 40 line drawings illustrating how to insert and tie skin sutures.

Nevertheless, this book is clear, persuasive, and comprehensive, and it deserves to enjoy a special position in the maxillofacial literature of English-speaking countries.

Medical Treatment of Mental Disease

The Toxic and Organic Basis of Psychiatry. DANIEL J. MCCARTHY, M.D., LL.D., consulting neurologist, Philadelphia General and Norristown State Hospitals; KENNETH M. CORRIN, M.D., neuropsychiatrist, Wilmington General Hospital. Philadelphia: J. B. Lippincott. London: Pitman Medical Publishing Co. 1955. Pp. 653. 96*s*.

LAUDABLY eager to remind family doctors and young psychiatrists that "there is much more to psychiatry than the purely psychological aspect," the authors go to the other extreme. They assert, without evidence, that all, or almost all, mental disorder is a matter of disordered chemical and physiological processes.

They leave aside not only the dynamic or psycho-analytical psychopathology so prominent in most American textbooks of psychiatry, but also the findings of applied psychology, and they are evidently unaware of their own psychological assumptions. There is certainly a need for a well-informed American textbook that has not a strong psycho-analytical bias; but this book does not supply the need.

A Classification for Medical and Veterinary Libraries

2nd ed. CYRIL C. BARNARD, B.A., F.L.A., F.I.L., librarian, London School of Hygiene and Tropical Medicine. London: H. K. Lewis. 1955. Pp. 279. £4 4*s*.

THE late Sir John MacAlister once said "You can't classify a medical library without doing more harm than good"; and many of those who have had to struggle with some of the schemes for keeping books in order would agree with him. In a large library the choice of a classification is one of the librarian's biggest problems; and unfortunately some of the ingenious methods that have been devised are too complicated for everyday use. Universal schemes suitable for all libraries have been widely adopted in medical libraries because they often form part of a bigger library and because they must provide for books on non-medical subjects. Mr. Barnard has adopted the method which starts with the books themselves and builds up a classification to fit them.

First published in 1936, the Barnard classification was originally devised for the London School of Hygiene and Tropical Medicine. No less than 8 of the 26 main divisions were allotted to bacteriology, parasitology, and medical zoology, classes which constitute less than a tenth of the stock of most medical libraries. The specialties of medicine, which may comprise nearly half of the stock of a medical libary, were all compressed into one main class. Mr. Barnard has now removed this bias by providing an alternative notation. The new arrangement is very ingenious and should enable the scheme to be applied in libraries of almost any type.

The main schedules of the classification have been thoroughly revised and brought up to date. In common with all the major schemes, the Barnard classification provides for further expansion and definition by means of auxiliary schedules and tables.

No classification has been (or is ever likely to be) devised which will meet the needs of both general and specialised medical libraries, large and small; but the Barnard classification is an heroic attempt to provide one. It has already been adopted by more than thirty medical libraries, including those of the Royal College of Surgeons of England and the World Health Organisation.

Maternal Emotions

NILES NEWTON, PH.D., research associate in obstetrics, school of medicine, University of Pennsylvania. New York: Paul B. Hoeber. 1955. Pp. 140. $3.

THE researches described in this monograph were concerned with women's feelings toward menstruation, pregnancy, childbirth, breast-feeding, infant care, and other aspects of their femininity. Dr. Newton has had much experience as a psychologist, working in close association with her husband in the department of obstetrics and gynæcology of Jefferson Medical College, and she records work done over nine years. Her own investigations have covered many of the subjects studied, but the references to other work are copious, though limited mainly to American sources.

There is no doubt that Dr. Newton is anxious to show how important maternal emotion is for both mothers and children. She deplores the present progression of American women towards artificiality, and points to the evidence for the satisfaction to be gained from following Nature's methods. She gives many useful facts on matters about which there has hitherto been endless argument based on untested assumptions. One instance is her tested finding that if a breast-fed baby takes his complementary feed (in American, "supplemental feed") from a spoon rather than a bottle, the length of the breast-feeding period will be doubled.

There are plenty of stimulating ideas for students of obstetrics, natural childbirth, or breast-feeding, and many challenges to pursue or review their work more closely. For psychologists, there is a great deal of material in the various appendices setting out methods of approach to the patient.

Radiographic Atlas of Skeletal Development of the Knee

S. IDELL PYLE, PH.D.; NORMAND L. HOERR, PH.D., M.D., department of anatomy, Western Reserve University School of Medicine, Cleveland, Ohio. Springfield, Ill.: Charles C. Thomas. 1955. Pp. 82. 31*s*.

THE work recorded in this book was undertaken to produce a standard of reference for the maturation of the knee-joint "for clinical use by a tested inspectional method."

The authors have analysed the various changes in the radiographs of knees during growth, and they reproduce 29 plates which they consider illustrate the normal development of the joint. The general production of the book is excellent and the reproduction of the films adequate, but it is difficult to see where its practical value lies or who would find it useful apart from those interested in the minutiæ of skeletal development. The changes from year to year in the growing knee seem too slight for confident differentiation, and they depend for their identification very much on the exact positioning of the joint, which may be surprisingly difficult. There are easier ways of estimating skeletal age than this.

Textbook of Pharmacognosy (3rd ed. London: J. & A. Churchill. 1955. Pp. 578. 42*s*.).—Most drugs introduced in the past ten years have been synthetic, but among the new material now included in Professor Wallis's well-known textbook are sections on *Rauwolfia serpentina* and *Rauwolfia canescens*, the sources of reserpine, on *Ammi visnaga* from which khellin is obtained, and on bentonite which is used in ointment and cream bases. For the rest, the third edition retains the lucid text and clear line drawings which have made the earlier editions deservedly popular with students and teachers alike.

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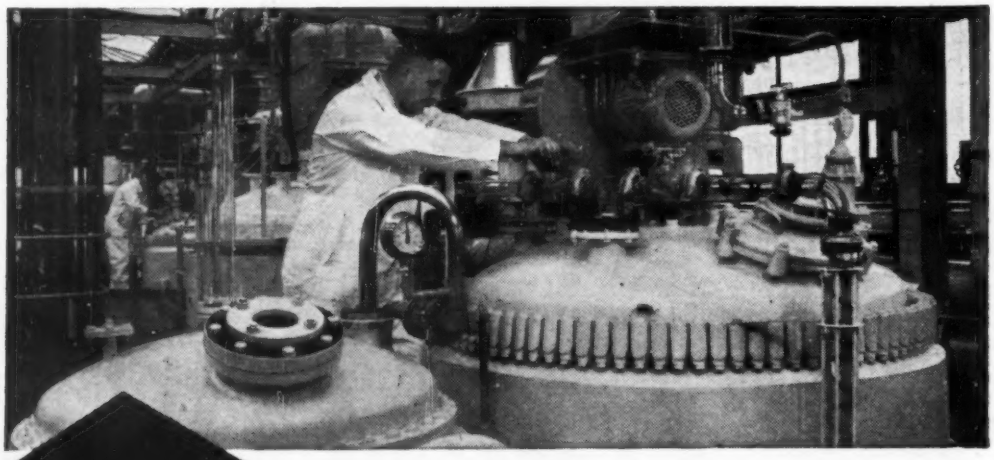

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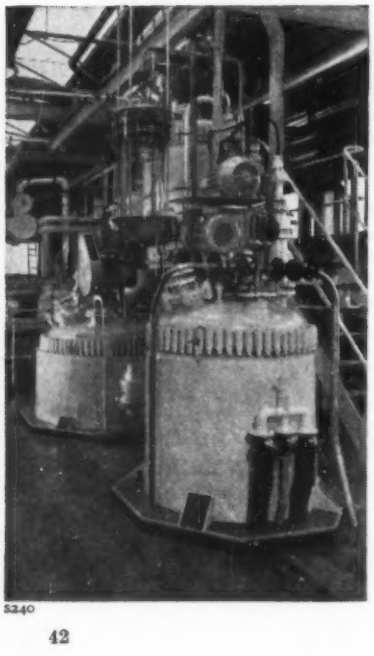

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LONDON: SATURDAY, JAN. 7, 1956

The Strategy of Medical Research

MEDICAL research in the United States—its achievements and prospects—is reviewed in two fascinating volumes from the American Foundation.[1] The second, in discussing the investigation of some of the major problems of the coming half-century, such as virus diseases, atheroma, hypertension, rheumatic disorders, and cancer, is lucid and readable; but the first volume may ultimately be more important, with its account of the activities of research institutes and the organisation of work within them. Almost every facet of the complex that makes for medical advance is examined in a study which has been in process for fifteen years and may have as much influence on American medical research as FLEXNER'S reports of forty years ago had on American medical education.

In organising research the first need is to recognise the born investigator. We have only to think of CHARLES SHERRINGTON, J. S. HALDANE, and their peers, to appreciate that sustained continuity of effort towards a single major objective characterises the work of really outstanding men. They usually bring to this work a wide knowledge based on their academic quality, and some early diversity of research interest supplies a breadth of biological and technical experience before they settle down to the task which they make their own. The great discoveries often come from observing the significance of some unexpected finding, which turns up in the pursuit of some apparently commonplace inquiry. The chance observation of glycosuria in depancreatised dogs led to insulin, the accidental fogging of a photographic plate gave us X rays, and the initial discovery of penicillin was the result of chance acting on "the prepared mind." Hence the danger, to which WIGGERS[2] calls attention, of research "by proxy" in which technicians and junior assistants do the laboratory work: in his own circle of acquaintance, WIGGERS says, at least three Nobel laureates did their own technical work with their own hands. It is only the inspired investigator, with a feeling for finer detail, who is likely to perceive the potential interest of the unexpected laboratory finding. GAUSS, when he was once asked how he had become the greatest contributor to mathematical thought, answered simply "By thinking about it *all the time*."

The growth of team-work, so necessary in the use of our increasingly complex technologies, brings its additional problems. There are the difficulties of integrating into a medical team scientists who may not have had even a biological training and are apt to be baffled by the vagaries of living patients and their diseases. Again, such may be the difficulties of resolving jealousies between members of the team, and of making use of the total brain-power of the group, that successful leadership is often as much an exercise in social and personal relationships as it is in science.

The American writers make a strong plea for the promotion of fundamental as opposed to applied research—a plea the more necessary because problems of immediate importance are more likely to appeal to the laity, who in one way or another must foot the bill. It is curious that in the United States, the wealthiest country in the world, medical schools seem to have financial troubles as great as or greater than our own. At least half of them are said to have budget deficiencies, or to need large sums to keep up their standards; and yet there are immensely wealthy foundations in a position to spend money on a lavish scale. (Perhaps it is not entirely fortuitous that, since these volumes were written, the Ford Foundation has announced its intention to make a grant of 500 million dollars to the American medical schools and associated institutions.[3]) Sometimes, of course, the money given by the public can be used only in some specific direction, such as cancer, psychiatry, and poliomyelitis; and the public does not necessarily give most generously to the most necessary purposes. (A child with a crutch elicits more financial sympathy than a man with a hearing-aid, though deafness may be a much greater total national physical handicap.) During years of intimate contact with investigators, research foundations become more sensitive to actual scientific possibilities; but unfortunately they do not pool their experience, and one after another they spend eight, ten, or more years in finding out the disparity between paper planning and actual needs. Some of the bodies financing research are apt to think in terms of immediate practical return for money spent; but others, of which the Markle Foundation [3] gets special commendation, concentrate on helping promising men to enter the academic field.

The pattern of research is influenced also through direction of government funds, State and Federal. The richer States can afford to give their State universities greater freedom, but others insist to a greater or less extent on using the university as a "local service station." Thus in the dairy State of Wisconsin about two-thirds of the problems under study are connected in some way with the economic needs of the State: an example is the study of enzymes concerned with the ripening of cheese. To suggest that such applied research is not fruitful would be wrong: it has led, for instance, to the understanding of sweet-clover disease of cattle which had caused bleeding and death of whole herds, and from this to the trial of dicoumarol as an anticoagulant in medicine. Indeed, direct governmental interference in research has led to many excellent advances. On the other hand, control by politicians has obvious dangers. The recent outbreak of political nervousness in the U.S.A. has apparently caused on occasion the abrupt withdrawal of research grants because of unspecified political suspicions; and the authors of this survey recognise that research and the freedom of speculation which go with it cannot flourish in such an atmosphere.

America has immense resources, technical and intellectual as well as financial. Research is done in

1. Medical Research: Mid Century Survey. Vol. I, pp. 797. Vol. II, pp. 772. Published for the American Foundation by Little, Brown & Co., Boston and Toronto, 1955. Price $15 the set.
2. Wiggers, C. J. *Circulation Res.* 1953, **1**, 475.
3. See *Lancet*, 1955, II, 1348.

university medical schools and allied institutes like the Massachusetts Institute of Technology, under various Foundations (some with their own independent institutes, like the Rockefeller), in self-supporting clinics like the Mayo, in the pharmaceutical and chemical industries, and under the ægis of scientific societies and voluntary health organisations. In spite of unevenness and difficulties of integration, medical research proceeds in an immense productive flood. In this country our resources are meagre in comparison. Nevertheless perusal of this work should make us appreciate the value of our system by which grants to the universities and Medical Research Council are made through the Privy Council and are thus beyond any ill-informed or undesirable political pressures. Also, while we should all welcome more money through private benefactors and research foundations, we may recognise that from such sources it may come with too many strings attached. Money, as JOHN M. RUSSELL [3] says, can sometimes do harm.

Hypertrophic Pulmonary Emphysema

THE essential features of hypertrophic pulmonary emphysema are loss of pulmonary elasticity and the disappearance of alveolar septa, but despite intensive investigation in recent years no decisive information about the precise causes has so far emerged. Some hypotheses, such as deficient blood-supply to the elastic tissue of the lung and over-stretching of the lungs because of a barrel-shaped thorax, do not now seem worthy of consideration; and the long-cherished view that emphysema was especially common in glass-blowers and players of wind instruments was given its quietus by CHRISTIE [4] in 1939. The suggestion that an inherent defect of elastic tissue is responsible for emphysema [5] is hard to disprove, but any hypothesis should take into account the almost invariable association of hypertrophic emphysema with bronchial diseases such as chronic bronchitis or asthma. Coughing and obstruction to air-flow have been put forward as relevant factors. Coughing does not seem likely to produce loss of elasticity from overdistension of lung tissue; certainly in the expiratory phase, when the glottis is closed, the intrathoracic pressure rises abruptly as the lungs are squeezed by the thoracic and abdominal musculature, but the pressure on either side of the alveolar septa must be equal, except in the less supported apices, which may bulge outwards. Again, during the deep inspiration which follows the expiratory phase, the lungs are no more distended than they are in the course of physical exercise regarded as beneficial. Nevertheless, as CHRISTIE [6] has pointed out, it may be that the violent pressure changes to which the delicate alveoli are subjected during persistent coughing may lead eventually to loss of pulmonary elasticity; and in that event the lungs would increase in volume and the thoracic cavity would undergo the familiar enlargement to accommodate their increased bulk. But it is difficult to produce satisfactory evidence in proof or disproof of this contention, because patients with persistent cough almost invariably have some bronchial affection producing increased resistance to air-flow; and many believe this is the important factor in the genesis of emphysema, as well as a consequence of it. This resistance to air-flow is greater in expiration, and, as an attack of bronchial asthma clearly shows, air may be trapped in the lungs. Even so, provided that air is distributed equally to the alveoli, the lung tissue will not be unduly stretched. It is certain, however, that in conditions like chronic bronchitis and asthma the obstruction is greater in some bronchioles than others, and GORDON [7] suggested that during inspiration alveoli supplied by normal or less obstructed bronchioles would have to accommodate not only their normal quota of air but also an extra amount to compensate for that which had failed to pass through the more obstructed bronchioles. Under these circumstances, although the total volume of air in the lungs would not be excessive, some of the alveoli would be grossly overdistended, and repetition of this process might lead to rupture and loss of elasticity. This theory of compensatory overdistension is supported by the pathological finding that in emphysematous areas of lung the associated bronchioles as well as the alveoli are dilated,[6 8] and by the persuasive, if indirect, experimental evidence reported by MEAD et al.,[9] to which we recently drew attention.[10]

It is possible, however, that further work on the ætiology of hypertrophic emphysema may illustrate the complexity of the subject rather than indicate any simple solution: this has certainly been the case in the matter of diagnosis. FLETCHER,[11] showed that physical examination is an unreliable guide, and KNOTT and CHRISTIE [12] demonstrated that radiological prediction may also be fallacious. It is necessary, therefore, to have recourse to the techniques of applied respiratory physiology, but it is uncertain at present which are the best and most practical ones. The test which has generally been regarded as most informative is the determination of the proportion of residual volume to total lung capacity; and a ratio of more than 35% is usually taken to indicate emphysema. But it is known that higher figures may be reached in older people without emphysema, and the test is too laborious for routine clinical use. A reduced vital capacity is generally recognised as of little value in the diagnosis of emphysema, yet, as DONALD [13] has pointed out, the ratio of residual volume to total lung capacity may not be much better, since the total lung capacity in many cases of emphysema is not appreciably increased, and is made up of vital capacity plus residual volume. DONALD said that if he were forced to diagnose the presence or absence of emphysema on the results of a single test he would choose the maximum breathing capacity (M.B.C.)—the amount of air the patient can move in and out of the chest in one minute—despite the difficulty of excluding false positives due to reversible bronchospasm. It is interesting, therefore, that the M.B.C. and the ratio of residual volume to total lung capacity are among the tests lately assessed by CURTIS et al.[14] in the diagnosis

4. Christie, R. V. *Edinb. med. J.* 1939, **46**, 463.
5. Villemin, J. A. *Arch. gén. Méd.* 1866, **118**, 385.
6. Christie, R. V. Diseases of the Chest. London, 1952; vol. II, p. 101.
7. Gordon, I. *Dis. Chest*, 1944, **10**, 180.
8. Kountz, W. B., Alexander, H. L. *Medicine, Baltimore*, 1934, **13**, 251.
9. Mead, J., Lindgren, I., Gaensler, E. A. *J. clin. Invest.* 1955, **34**, 1005.
10. *Lancet*, 1955, ii, 810.
11. Fletcher, C. M. *Proc. R. Soc. Med.* 1952, **45**, 577.
12. Knott, J. M. S., Christie, R. V. *Lancet*, 1951, i, 881.
13. Donald, K. W. *Brit. med. J.* 1953, i, 415.
14. Curtis, J. K., Rasmussen, H. K., Mendenhall, J. T. *Amer. Rev. Tuberc.* 1955, **72**, 569.

of early emphysema. They estimated the M.B.C. in 328 patients with pulmonary disease (tuberculosis in most cases) for which pulmonary resection was later carried out. Suitable specimens for study were obtained at operation in all but 3 of these cases, and emphysema was demonstrated in 150. The M.B.C. was considered abnormal when the volume was 95% or less of the predicted value and when, in addition, elevation of the spirogram indicated trapping of air. On these criteria, the M.B.C. was abnormal in 92 (61%) of the 150 cases of proved emphysema, but it was also abnormal in 22 (12%) of the cases in which emphysema was not demonstrated. In some patients with emphysema, the spirogram was raised, although there was no apparent reduction in the volume of the M.B.C.; and this evidence of air trapping came to be considered the more significant factor. The ratio of residual volume to total lung capacity was determined in 48 patients with proved emphysema, but in only 17 severely affected patients did it amount to more than 35% of the total lung capacity, and this test therefore failed as a useful indication of early emphysema. The timed vital capacity (T.V.C.), a test in which prolongation of expiration is indicated by measuring the proportion of the vital capacity which can be expired in a given time, was performed in 113 patients, 79 of whom had proved emphysema. A two-second T.V.C. of 90% or less was considered abnormal, and this was found in 71 (90%) of the 79 patients with emphysema and in 18 (53%) of the others. A test devised by COMROE and FOWLER [15] to detect uneven alveolar ventilation during a single breath of oxygen was used in 114 patients, of whom 70 had proved emphysema. A rise of nitrogen in the expired breath to more than 2% was regarded as abnormal. This test was abnormal in 59 (84%) of the patients with proved emphysema and in 20 (46%) of the others. The most sensitive indication of emphysema was a combination of prolonged T.V.C., elevation of the spirogram to hyperinflation level during the M.B.C. test (whether or not the M.B.C. was apparently reduced), and a rising curve of alveolar nitrogen after a single breath of oxygen.

These tests are, of course, by no means specific and their practical value will have to be further assessed; but they are all easy to perform, and the first two do not require expensive apparatus. Any work which may help the clinician to gather some fruit from the physiologist's tree of knowledge is certainly welcome.

Soil, Water, and Cancer

IN 1947, STOCKS [16] noticed a peculiar distribution of deaths from cancer in Greater London which he could not explain by differences in age-groups, social conditions, or number of hours of sunshine. This led him to observe that the four London boroughs supplied largely by well water had lower cancer mortalities than most of the boroughs supplied by river water. STOCKS and his colleagues are continuing their inquiry, into the possible relation between what might be called the geological conditions of habitation and cancer mortality, in the North Wales area. They have demonstrated an association between an increased mortality from cancer of the stomach in Anglesey and residence on a particular soil group,[17 18] though this association was less definite for agricultural workers. The soil in question, because of the equable distribution of moisture at all levels and at all seasons, has a continuous period of plant growth and biological activity, whereas soils not associated with an excessive cancer mortality are subject to late spring or summer drought due to shallowness or rapid drainage, or they have a long wet season because of poor drainage. Earlier work [19] in North Wales and elsewhere suggested that the high organic content of cultivated soils was associated with increased cancer mortality.

To overcome the great shortage of drinking-water in the Netherlands, schemes have been suggested for the introduction of river water as the main source of supply. TROMP,[20] aware of STOCKS's ideas, took note of these plans and decided to study the relation between the physicochemical properties of drinking-water and cancer mortality. In Holland, the highest total cancer death-rate for all sites had been found amongst municipalities supplied by river water,[21] and where the water had a high SiO_2 and low manganese and natron content. Further studies suggested that a high manganese content of the drinking-water is associated with lower cancer frequencies. Recently, TROMP and DIEHL [22] have extended their work to a more detailed study of the relation between soil and cancer mortality and especially cancer of the stomach. The period studied was 1900–40. The average cancer mortality (all sites together) per decade for persons over 50 years of age was ascertained for the seven principal soil types in the Netherlands. These soils range from the acid reclaimed and poorly drained peat soils, through sandy soils, to the more alkaline river-clay type. The highest cancer death-rate was found in municipalities situated on peat and reclaimed peat soils and the lowest on river-clay soils. Thereafter, for the period 1946–52, they studied the total numbers of deaths from cancer of the stomach in men over the age of 50 living in municipalities on the various soil types. As in the case of cancer in all sites, it was found that there was a lower mortality from cancer of the stomach, at all ages, among people living on river-clay soils and a higher mortality among those on peat soils. Moreover, the order of frequency in relation to soil was, with one exception, similar to that of cancers of all types.

TROMP and DIEHL conclude that the association between soil type and cancer mortality is a real one. They feel that they have eliminated differences in sex and age grouping which might influence such a relationship. They also considered the question of differences in type and character of the municipalities (for instance, rural, semi-rural, and urban) which might have affected the figures. Regarding genetic and racial factors, they say that no obvious correlations have been found in the department of anthropogenetics of the Netherlands Institute of Preventive Medicine between soil units and racial groups. Nevertheless, in

15. Comroe, J. H. jun., Fowler, W. S. *Amer. J. Med.* 1951, **10**, 408.
16. Stocks, P. Regional and Local Differences in Cancer Death-rates London, 1947. General Register Office, Studies on Medical and Population Subjects, no. 1.
17. Davies, R. I., Wynne Griffith, G. *Brit. J. Cancer*, 1954, **8**, 56
18. Wynne Griffith, G., Davies, R. I. *Ibid*, p. 594.
19. Legon, C. D. *Ibid*, 1951, **5**, 175; *Brit. med. J.* 1952, ii, 700.
20. Tromp, S. W. *Brit. J. Cancer*, 1954, **8**, 584.
21. Diehl, J. C., Tromp, S. W. Foundation for the Study of Psychophysics. First Report on the Geographical and Geological Distribution of Carcinoma in the Netherlands. Oegstgeest, Holland, 1954.
22. Tromp, S. W., Diehl, J. C. *Brit. J. Cancer*, 1955, **9**, 349.

view of the work[23 24] which has shown that cancer of the stomach is commoner among people of blood-group A and is particularly rare in those of group O, they suggest that a study of the blood-groups in the Netherlands municipalities would be relevant to this question. They are not prepared to speculate about the causes of the observed correlation between soil and cancer, except to point out that traces of metals in soil, drinking-water, and food (which in the smaller municipalities is mostly locally grown) would be sufficient to disturb enzyme balance; and they seem to have made a start in searching for such trace elements. The labour involved in the search will be prodigious.

All these considerations bring us back to the old question of how firm can be the conclusions drawn from death-certificates. The Dutch workers believe that registration of deaths in Holland is accurate, partly because the secrecy of death-certificates is assured and partly because the mortality data are collected by a very competent organisation, the Netherlands Central Bureau of Statistics. They assert that, except in the largest cities, the population does not migrate much and that doctors and hospitals do not vary in competence or facilities in different parts of the country. We can agree with all these arguments, but there still must be many inaccuracies in death certification without post-mortem examination (and even with it). Despite the evidence of a fairly stable population, changes in habitation must be considerable during a long life and with easy means of transport. Perhaps the strongest argument in favour of a soil-cancer relationship is its demonstration in two communities as widely separated as Anglesey and Holland.

23. Aird, I., Bentall, H. H. *Brit. med. J.* 1953, i, 799.
24. Koster, K. H., Sindrup, E., Seele, V. *Lancet*, 1955, ii, 52.

Annotations

MYXOMATOSIS

SINCE October, 1953, man and the rabbit-flea (*Spilopsyllus cuniculi*) have contrived to spread myxomatosis through the length and breadth of the land. Pockets of countryside have escaped entirely; in other areas the pestilence has passed and the few survivors are beginning to re-stock the warrens; but in most farming counties foxes make do with rats, field-voles, and even vegetable matter, while buzzards lack the rabbit-meat they need to produce the normal 2–3 eggs. Some of these changes were discussed not long ago at a meeting of the Mammal Society of the British Isles[1]; but we must recognise that the entry of myxoma virus has redrafted the ecological play, and we are watching only the opening scene.

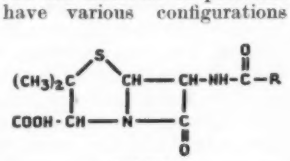
Fleas feed on the head and ears of rabbits, and in this country the rabbit-flea is the most important vector of the virus. Its range is short and it probably cannot spread the disease more than a few miles each month: in Kincardineshire, for example, there were many infected rabbits only a few hundred yards—but on the far side of a stream—from a single focus deliberately introduced some months earlier. In Australia myxomatosis takes wing on mosquitoes, but here only *Anopheles maculopennis atrovarus*, which may carry virus for six months, is a possible vector. Nor can infection be readily induced by mechanical contact, or by contaminated grass or vegetables; and this, no doubt, largely accounts for the absence of the disease in backyard and animal-house. The virus still maintains its extraordinary host-specificity, and, apart from a few brown hares, rabbits are the only mammals known to have been naturally infected.

Our wild rabbit has qualities that will almost certainly ensure its survival; but a virus-resistant strain has not yet emerged, and, though immune rabbits have been bred, their progeny are normally susceptible. On the other hand, attenuated field strains of virus are well known, particularly in Australia but also in France, and recently recovered immune rabbits have been picked up over an area of 50,000 acres in the Dukeries in Nottinghamshire. This attenuated strain is said to kill only about half its victims, compared with the 99% mortality by the strain prevalent elsewhere. So far this seems to be an isolated instance; but, should the attenuated strain spread or appear in other areas, both myxomatosis and hordes of rabbits may be permanently with us. To avoid this and to increase food-supplies, the Minister of Agriculture is pressing on with the designation of rabbit-clearance areas in which occupiers of the land must destroy the rabbits or, if this is impossible, prevent their causing damage. There is strong financial inducement to farmers to carry out the provisions of the 1954 Pests Act, for conservative estimates for England and Wales show that last year the grain yield in rabbit-free areas was raised by about two hundredweight an acre—equivalent to something over £10 million sterling. These are immediate returns, but the eventual gains could be much more striking. For those with only an eye for the countryside, ash and oak saplings are beginning to appear where they were scarcely seen before, gorse is shooting prodigiously, grasses are higher, and wild flowers such as cowslip and rock-rose, and even the rarer orchids, have bloomed unexpectedly.

1. See *Nature, Lond.* 1955, **176**, 1155.

CHEMISTRY AND ACTION OF ANTIBIOTICS

THE structure of antibiotics and the way in which they work have lately been reviewed by Regna[1] and Umbreit.[2] The term "antibiotic" has come to refer to any chemical substance produced by a micro-organism which can inhibit the growth of, or otherwise destroy, other bacteria or micro-organisms. By this definition, the first antibiotic was penicillin. In the molecule of penicillin the side-chain R can have various configurations such as benzyl, pentenyl, amyl, and so on. The elucidation of the chemical structure of this molecule was finally achieved by a brilliant and painstaking crystallographic analysis of the molecule,[3] after organic chemists, both in Great Britain and in the United States, had been unable to decide between two possibilities. Biosynthetic pathways[4] have been used to vary the group R, and other clinically useful preparations have been devised by salt formation with the free-acid group of penicillin (the procaine, chloroprocaine, and ephenamine salts, for example). Penicillin seems to be adsorbed to and thereby deactivates a specific component of the cell wall of the bacterium.[5] This inactivation appears to lead to a disturbance in the synthesis and metabolism of the nucleic acids,[6] and this causes, in turn, disturbances in

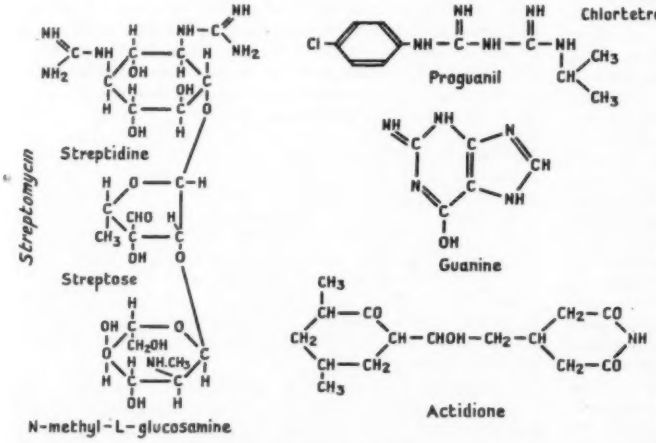


Penicillin

1. Regna, P. P. *Amer. J. Med.* 1955, **18**, 686.
2. Umbreit, W. W. *Ibid*, p. 717.
3. Crowfoot, D., Bunn, C. W., Rogers-Low, B. W., Turner-Jones, A. *In* The Chemistry of Penicillin (edited by Clarke, H. T., Johnson, J. R., Robinson, R.). Princeton, 1949; p. 310.
4. Behrens, O. K. *Ibid*, p. 657.
5. Few, A. V., Cooper, P. D., Rowley, D. *Nature, Lond.* 1952, **169**, 283.
6. Gale, E. F. Symposium on Mode of Action of Antibiotics, 2nd Int. Cong. Biochem. Paris, 1952.

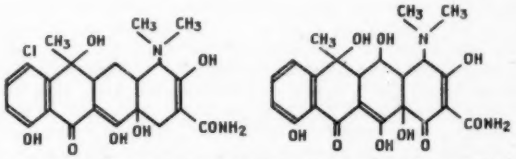
amino-acid incorporation and protein synthesis.[7 8] But a more detailed understanding of the action of penicillin is still lacking.

The combination of the unusual 4-membered lactam ring and a hitherto unknown α-amino-acid in the penicillin molecule suggested that other antibiotics, as they were discovered, were likely to have structures differing unexpectedly from any of the known groups of natural products. This feeling has been amply justified. Streptomycin was shown [9] to contain 3 separate moieties (streptidine, streptose, and N-methyl-L-glucosamine) joined by glycoside linkages. The guanidine residues in streptidine recall the active antimalarial drug proguanil ('Paludrine') and the biologically important guanine, which is contained in nucleic acids; streptose and the L-glucosamine fragments had not previously been encountered from natural sources. The cultures of *Streptomyces griseus* which produce streptomycin produce some closely related antibiotics (mannosido-streptomycin,[10] hydroxystreptomycin [11]) and also actidione [12] which, although inactive against bacteria, is useful for its action against fungi.



In contrast to penicillin, streptomycin can be shown to react with a variety of cellular constituents. It forms a complex with proteins and nucleic acids, with subsequent alteration in the surface charge on the bacterium, and it inhibits several enzyme systems.[13] Of these, the oxalacetate-pyruvate system appeared to be an important seat of action; and it was found that the formation of a hitherto unknown metabolite, 2-phospho-4-hydroxy-4-carboxyadipic acid,[14] from a dicarboxylic acid and pyruvate was inhibited by streptomycin at dilutions comparable to those required to inhibit growth.

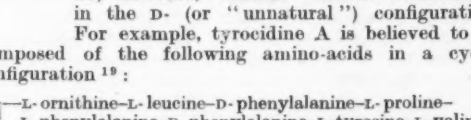
Chloramphenicol has unusual chemical features.[15] The molecule contains a nitrobenzene fragment and an amide derived from dichloroacetic acid. Although both of these compounds had been known to generations of organic chemists, the isolation of chloramphenicol was the first indication that they could be natural products. The stereochemical configuration of the side-chain is related to D-threose and is an absolute requirement for antibacterial activity. Chloramphenicol is also unique among antibiotics used clinically in that it can be synthesised on a commercial scale.[16] A clinically useful chemical derivative is obtained by esterification of the primary alcoholic group with palmitic acid.[17] This ester is slowly hydrolysed in the duodenum, releasing the active principle and thereby providing long-sustained therapeutic blood-levels. Practically nothing is known about the mode of action of chloramphenicol, but interference with amino-acid formation and metabolism is probably not the initial reaction.



The tetracycline antibiotics, to which chlortetracycline (aureomycin) and oxytetracycline (terramycin) belong,[18] all possess a nucleus of 4 partially hydrogenated 6-membered rings and are produced by species of streptomyces. The mode of action of this group is unknown. The members of another group, which includes the various tyrothrycins, gramicidin, and bacitracin, have structures with which the organic chemist is already familiar. The family of polypeptide antibiotics which are usually cyclic in structure do, however, contain various amino-acids in the D- (or "unnatural") configuration. For example, tyrocidine A is believed to be composed of the following amino-acids in a cyclic configuration [19]:

—L-ornithine–L-leucine–D-phenylalanine–L-proline–
L-phenylalanine–D-phenylalanine–L-tyrosine–L-valine

It is interesting that oxytocin, the oxytocic principle of the posterior pituitary, is also a cyclic polypeptide.[20] The structures of erythromycin and carbomycin, two of the newer antibiotics, are not known in full; but degradations have been reported,[21] suggesting a partial structure for erythromycin.



The question of how an antibiotic acts and the problems of bacterial resistance [22] are closely related. It is probable that bacterial resistance does not necessarily arise as a result of the action of the drug, but that there

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8. Hotchkiss, R. D. *Ann. N.Y. Acad. Sci.* 1950, **53**, 13.
9. Brink, N. G., Folkers, K. *Advanc. Enzymol.* 1950, **10**, 145.
10. Fried, J., Stavely, H. E. *J. Amer. chem. Soc.* 1947, **69**, 1549.
11. Benedict, R. G., Stodola, F. H., Shotwell, O. L., Borud, A. M., Lindenfelser, L. A. *Science*, 1950, **112**, 77.
12. Whiffen, A. J., Bohonos, N., Emerson, R. L. *J. Bact.* 1946, **52**, 610.
13. Umbreit, W. W. *Trans. N.Y. Acad. Sci.* 1952, **15**, 8.
14. Umbreit, W. W. *J. Bact.* 1953, **66**, 74.
15. Rebstock, M. C., Crooks, H. M., Controulis, J., Bartz, Q. R. *J. Amer. chem. Soc.* 1949, **71**, 2458.
16. Olive, T. R. *Chem. Engng*, 1949, **56**, 107.
17. Glazko, A. J., Edgerton, W. H., Dill, W. A., Lenz, W. R. *Antibiotics*, 1952, **2**, 234.
18. Stephens, C. R., Conover, L. H., Hochstein, F. A., Regna, P. P., Pilgrim, F. J., Brunings, K. J., Woodward, R. B. *J. Amer. chem. Soc.* 1952, **74**, 4976.
19. Paladini, A., Craig, L. C. *Ibid*, 1954, **76**, 688.
20. du Vigneaud, V., Ressler, C., Trippett, S. *J. biol. Chem.* 1953, **205**, 949.
21. Flynn, E. H., Sigal, M. V., Wiley, P. F., Gerzon, K. *J. Amer. chem. Soc.* 1954, **76**, 3121.
22. Bryson, V., Demerec, M. *Amer. J. Med.* 1955, **18**, 723.

are natural mutants which are able to develop and multiply under conditions fatal to the wild type. This resistant strain can then be expected to develop mutants which are as well fitted for survival as the original strain.

PREVENTION OF JUVENILE DELINQUENCY

So far most attempts to deal with juvenile delinquency have concentrated upon the established condition—correction rather than prevention. Yet bad social and economic circumstances need equal attention, and we therefore welcome a report [1] recently published by the City of New York mayoral office which describes a concerted and planned approach, at municipal-authority level, to the prevention of delinquency. These measures were based upon sound preliminary research into the backgrounds most likely to promote delinquent trends among young people in New York. It was recognised, for example, that there is a need for more guidance and friendly supervision of certain adolescents in their recreational pursuits, and for the education of their parents in handling emotional problems within the family group. The report therefore provides for more trained workers in the youth-club movement and at community centres on certain housing estates. The juvenile liaison department of the City Police Service is also to be augmented to provide more staff for informal contact with the youth in vulnerable districts. In education, the report proposes the formation of a pool of senior school teachers, experienced in handling pre-delinquent children, and they will circulate among schools in "difficult" localities. Certain disabilities, such as backwardness in reading, are associated with delinquency in children of potentially normal intelligence, and the report therefore advocates wide extension of remedial coaching to counteract this tendency. Under-privileged senior school students, who might otherwise drift into unsavoury associations, are to be encouraged to complete their education, if necessary while working half-time in private industry at prevailing wages. The programme for advising and guiding parents, through parent-teacher associations, is to be extended by means of informal evening discussion-groups, led by experienced counsellors.

These proposals do not depart radically from previously accepted principles. No specific proposal is new, and indeed similar provisions, on a more limited scale perhaps, already exist in many places in this country. What is noteworthy, however, is the degree of coördination: the report advocates the formation of an independent planning committee, which will assess the results of the new drive, so that promising developments can be given further scope, and duplication of effort may be avoided. It is in coördination that the report's lesson lies.

The New York plan is an expensive one and it would be hard to get approval for spending so lavishly on a comparable scheme for London, for example. But it should be possible, without ruinous cost, to do more in support of a vigorous coördinated policy of prevention in this country; and it is good to read in Dr. J. A. Scott's report on the health of London in 1954 that steps are being taken to bring into effect the main recommendations of the L.C.C. study group on preventive mental health in the maternity and child-welfare services.[2] What is in fact needed is not so much new services as a re-orientation of existing ones and their closer collaboration to avoid overlapping. Sir Basil Henriques, in his Peter Le Neve Foster lecture to the Royal Society of Arts last April,[3] made substantially the same point, when he referred to the need for a composite child-welfare office in every town and in every district of cities, to contain the headquarters of all statutory and voluntary bodies dealing with the welfare of children. Sir Basil's concept of a Ministry of Juvenile Welfare, combining the children's departments of the Home Office, the Ministry of Education, the Ministry of Labour Youth Employment Council, and the Ministry of Health, is not perhaps so fanciful in the light of the New York report: it might simply be a national extension of the coördination that New York is seeking on a municipal scale.

1. Perspectives on Delinquency Prevention. By HENRY EPSTEIN, deputy mayor of New York. Obtainable from the City of New York, Office of the Mayor, New York, 7, N.Y. Pp. 66. $5 for 10 copies.
2. See *Lancet*, 1954, ii, 1005.
3. *Ibid*, 1955, i, 1016.

HYDROCORTISONE FOR URETHRAL STRICTURE

IN recent years improved treatment of urethritis has greatly reduced the incidence of inflammatory stricture of the urethra; and, by comparison, traumatic stricture, whether from injudicious instrumentation, long-continued catheterisation, or other causes, has become more significant. As urethral strictures, whatever their cause, are notoriously hard to treat, there is always a strong incentive to try any novel means of dealing with them. In advocating local treatment with hydrocortisone, Bonner and his colleagues [1] in Boston base their method on the ability of hydrocortisone to diminish proliferation of fibroblasts in wounds and on its fibrolytic activity which they observed in established scar tissue. They first dilated the stricture as far as possible without danger of rupture, and then an aqueous suspension of hydrocortisone was injected into the stricture at two points on its circumference. Meatal strictures were injected directly with a small hypodermic needle, and those more deeply placed were located through an endoscope (under local or general anæsthesia) and injected with a special needle of suitable length. The procedure had generally to be repeated once or twice later, according to the response. 18 urethral or meatal strictures were dealt with successfully in this way.

Compared with existing methods of treatment, the results recorded by Bonner et al. are remarkable. Much improvement undoubtedly followed the injections in several long-standing and resistant strictures; but nearly half the patients in the series had recent meatal lesions which might have done well without hydrocortisone. Moreover, cortisone treatment of other lesions of the urinary tract (such as chronic interstitial cystitis, Hunner's ulcer, and Peyronie's disease) has not borne out its early promise, and it would be premature to believe that hydrocortisone is a big advance in the treatment of urethral stricture.

RISKS OF BOXING

SPEAKING to medical officers of the London Amateur Boxing Association on Dec. 5, Dr. Edwin Clarke said that the 6 deaths of amateur boxers since the war have all been from intracranial hæmorrhage; and the meeting recommended various precautions—that rubber floors should always be used for boxing shows; that a doctor should be allowed to assess the injuries of boys who have been stopped during a bout; that "all cases of prolonged unconsciousness or amnesia after a head injury should be sent immediately to hospital by ambulance"; and that the medical officers should be provided with forms on which to notify the boxer's own doctor of any injuries received, so that treatment may be continuous. The negative results of electro-encephalography in 11 cases were held to show that "the policy of at least four weeks' rest from boxing after a severe head injury is paying dividends."

A few years ago, in reporting rules made by the New York State Athletic Committee,[2] which include the attendance of a doctor at the ringside who can if necessary advise the referee to stop the fight, we took the view

1. Bonner, C. D., Lyons, M. K., Shields, D. *New Engl. J. Med.* 1955, **253**, 130.
2. *Lancet*, 1950, i, 1006.

that it is virtually impossible to detect a potential candidate for intracranial hæmorrhage; and we pointed out that though early signs and symptoms of traumatic encephalopathy ("punch drunkenness") may be discovered in veteran professionals, it is rare in amateur boxers. Electro-encephalography has been used to detect early brain damage,[3] but the results are by no means conclusive and there would be serious difficulties in enforcing this investigation as a routine in amateur boxing.

Many people, while agreeing that professional boxers are liable to severe injuries, especially after they reach 30 years of age, maintain that amateur boxing is relatively safe; but Doggart,[4] who describes the eye injuries sustained by boxers, stands four-square against both forms of the sport. "Medical supervision," he remarks, "cannot alter the anatomy of the human skull or lessen the delicacy of those organs which subserve our highest faculties," and he quotes the opinion of Carroll[5] that probably no head blow is taken with impunity and each knock-out causes definite and irreparable damage. He also deplores the effect of boxing on the spectators.

HOSPITAL COSTING

As in previous years the Hospital Costing Returns for 1954–55[6] set out the costs for every hospital in the National Health Service in England and Wales under itemised headings. The object of these analyses is to enable comparisons to be made between broadly comparable hospitals, in order "to promote economy, increased efficiency and improvements in methods of administration."

The classification of hospitals has been somewhat changed. The term "general hospital" has now been replaced by "acute hospital"; and consequently a class-by-class comparison of costs cannot be made as accurately as in earlier years. This, however, is unimportant, for the whole structure of the analysis is riddled with inconsistencies, on account of which comparison between hospitals is virtually impossible—except perhaps in the column "average weekly cost of provisions per person fed," and in the column giving the final over-all figure. The greatest source of difficulty is the variation in numbers of outpatients, which are allowed for at an arbitrary cost. The ratio of casualty to true outpatient attendances must, however, vary considerably between different districts, and the actual cost per attendance must vary greatly with the type of service given. The outpatient cost is allowed for in the final cost column per inpatient bed, but not among the individual items of running costs. Until the cost of outpatients and casualties is excluded from the main hospital inpatient analysis, these costing tables will remain too full of fallacies for any serious comparisons to be made.

In practice, these annual publications are not significantly aiding economy; but they are proving of some indirect value to patients. When a difference between two comparable hospitals is studied, there is invariably a good reason for the discrepancy; and usually the difference reveals a need for greater expenditure in the less costly hospital, rather than for reduction in the more costly one. Hospitals by and large still have a remarkable amount of old-fashioned and extravagant equipment, particularly for heating. Again, some hospitals have reduced maintenance to dangerously low levels. The general public is perhaps more keenly aware than hospital staff themselves that there is a greater concentration of dangerous organisms in hospitals than anywhere else in the community. The low hygienic level still prevalent in some hospitals owing to economy in maintenance constitutes a real danger and is paid for by recurring outbreaks of cross-infection or food-poisoning, sometimes with loss of life.

It is surprising that indices of comparison, such as "cost per patient treated" and "average length of stay," are omitted; but these figures are available to the regional boards. It is very doubtful whether any sufficient purpose is served by publication of these annual tables in their present form. They will never bring about true long-term economy. What is needed is an over-all figure, together with a few tables free from gross fallacies. Each year some aspect of hospital activity could be studied by a true costing system, and the lessons published as a guide to policy.

LYSINE DEFICIENCY

LYSINE is one of the amino-acids essential for man—that is, it cannot be synthesised in the body and if it is not supplied in the diet symptoms of lysine deprivation occur. Osborne and Mendel[1] showed that animals remained alive when gliadin provided all the dietary protein, but they grew only when lysine was added to the diet. Deficiency of lysine has also been shown to cause anæmia in animals.[2] In humans Albanese and Holt[3] found that experimentally induced lysine deficiency caused negative nitrogen balance, which was reversed as soon as lysine was added to the diet. The only woman in their inquiry menstruated during the period of lysine deprivation, and she noted a complete absence of the swelling of the breasts, headaches, and weight-gain which usually preceded her periods. This observation is interesting in view of the influence of lysine-deficient diets in suppressing the œstrus cycle in animals.[4] Albanese et al.[5] showed that people on a lysine-deficient diet had a greatly increased urinary excretion of non-ketonic organic acids. Restoration of lysine to the diet promptly reduced the excretion of these acids to normal. During the period of high organic-acid excretion they all complained of nausea, vertigo, and hypersensitivity to metallic sounds.

In the body lysine seems to be remarkably inert. Thus Schoenheimer and Rittenberg[6] found that lysine was the only amino-acid which failed to take up N^{15} when they fed rats with isotope-tagged ammonia and various amino-acids. When *l*-lysine tagged with deuterium and N^{15} was given to rats, the lysine of the tissues contained the isotopes in the same proportion as that in which they had been given, although N^{15} from administered lysine was found in other amino-acids. But the lysine which was incorporated into the tissue proteins had undergone no chemical change. Although lysine can donate amine groups, its main function is in the formation of proteins. It is not surprising therefore that Albanese et al.[7] have now recorded that lysine added to milk mixtures given to infants had a remarkable effect on weight and nitrogen balance.

Currently fashionable fresh or dried milk mixtures were given to 15 children from one to twenty-seven months old. After a control balance period, lysine was added to the diet in the form of 100 mg. of *l*-lysine-HCl per kg. body-weight per day. A control series of 9 children aged two to eighteen months received no lysine supplement. During the period of added lysine, 5 of the children on supplemented diets gained in weight and

3. *Ibid*, 1953, i, 283; 1955, i, 1114.
4. Doggart, J. H. *Arch. Ophthal., N.Y.* 1955, **54**, 161.
5. Carroll, E. J. *Amer. J. med. Sci.* 1936, **191**, 706.
6. National Health Service: Hospital Costing Returns, year ended March 31, 1955. H.M. Stationery Office. Pp. 127. 17*s.* 6*d.*

1. Osborne, T. B., Mendel, L. B. *J. biol. Chem.* 1914, **17**, 325.
2. Hogan, A. G., Powell, E. L., Guerrant, R. E. *Ibid*, 1941, **137**, 41.
3. Albanese, A. A., Holt, L. E., Brumback, J. E., Hayes, M., Kajdi, C., Wangerin, D. M. *Proc. Soc. exp. Biol., N.Y.* 1941, **48**, 728.
4. Benedict, F. B., Finn, M. D. *Amer. J. Physiol.* 1928, **86**, 50.
5. Albanese, A. A., Holt, L. E., Frankston, J. E., Kajdi, C. N., Brumback, J. E., Wangerin, D. M. *Proc. Soc. exp. Biol., N.Y.* 1943, **52**, 209.
6. Schoenheimer, R., Rittenberg, D. *Physiol. Rev.* 1940, **20**, 218.
7. Albanese, A. A., Higgons, R. A., Hyde, G. M., Orto, L. *Amer. J. clin. Nutr.* 1955, **3**, 121.

went into positive nitrogen balance, 6 had no spectacular weight gains but went into positive nitrogen balance, and in all these 11 the blood-proteins increased. The other 4 children in this group, whose growth-rate was already above average, showed no response to added lysine. Albanese and his colleagues conclude that lysine-fortification will improve the nutritional value of many infant foods, including cow's milk, but that this is only effective with children who are not deriving adequate nourishment from their food. They also suggest that whereas the lysine-tryptophane ratio in the diet of young adults necessary for growth is from 2·0 to 3·2,[8 9] the needs of an infant can only be met by a ratio of 6·0. If they are right, it seems that human breast-milk with a lysine-tryptophane ratio of 3·8 [10] may be insufficient to meet the growth requirements of infants—and there is no evidence that that is so. A more recent report [12] by Albanese et al. confirms their earlier findings and suggests a simplified scheme of dosage for feeding lysine to infants.

ARTIFICIAL RESPIRATION IN CHILDREN

SOME 120 children under the age of five die in Great Britain each year from drowning; and mechanical suffocation in bed or cradle is given as the cause of death of an even larger number, but this diagnosis is almost certainly wrong in many cases. Nevertheless, some of these lives might well be saved if parents were better able to deal with the emergency by applying manual artificial respiration at the earliest possible moment. The time spent in summoning help may make the difference between success and failure of artificial respiration. Moreover, the aspiration of large amounts of water, especially fresh water, causes profound circulatory changes, hæmodilution, hæmolysis, and ventricular fibrillation.[13] These changes develop rapidly and may be the most potent factor in death from drowning, and one of the main reasons why action must be swift.

A method of artificial respiration for reviving children must be effective, simple, easy to teach, and not fatiguing to use. These requirements have been considered by Rickard,[14] who concludes that there is as yet no satisfactory method for children under two, but for the older ones the now standard Holger-Nielsen [15] method is suitable. He has therefore proposed a new method for children under two which he has called the "Rickard prone tilting visceral shift method." This is an ingenious use of the rocking principle,[15] which Eve devised when treating a two-year-old child with diaphragmatic paralysis.[16 17] The rocking method is also recommended in children in Garland's excellent handbook.[18] In Rickard's method the prone child is laid length-wise along the operator's right forearm with the child's face cupped in the operator's right hand. The right middle finger is inserted in the child's mouth, holding the tongue forward, allowing drainage of secretions, and maintaining the airway. The patient is steadied by the operator's left hand and is then rocked rhythmically by alternate flexion and extension of the right elbow. Rocking begins with a downward tilt of 45°, which produces expiration and expels the aspirate. It is continued through an arc of 90° at a rate of eight to twelve times a minute. Only experience can show whether this method is effective, but there is no reason to believe otherwise. The excellent ventilation achieved with both the Eve and Nielsen methods was demonstrated on curarised anæsthetised adult volunteers,[19] but that experiment should not be performed with the Rickard method. If, as seems likely, the method proves to be a valuable one, it should be made widely known.

PARALYSIS TREATED BY MUSCLE TRANSFER

THE transfer of a single muscle attachment has been widely used in the treatment of permanently paralysed limbs, but apart from the pectoralis transplant described by Clark,[20] complete muscle transfer has not been recorded. Schottstaedt et al.[21] may therefore have opened a new field of orthopædic treatment. Few muscles, of course, can be completely transposed, and unless the distance to be moved is small, a long and mobile neurovascular pedicle is essential. Either the pectoralis major or the lattismus dorsi can be used in this way to provide flexion of the elbow; the insertion of each is transferred to the coracoid process and the origin to the radius. The lattismus dorsi can also be used to unite coracoid to olecranon to produce elbow extension. The restoration of neck flexion by transposition of the pectoralis major to replace a paralysed sternomastoid, and the use of an intact sternomastoid to replace a paralysed masseter, are each ingenious examples of the art of muscle transposition.

Views on the value of tendon transplantation in poliomyelitis are changing, and it is clear that many procedures do little lasting good. When complete muscle transposition is performed the strength of contraction may not be great, but further experience of the optimum fibre length for effective action may improve these results. Although many patients with severe paralysis may be unable to afford the loss of a large muscle mass, others may find it of great value to have the independence of action which transposition brings.

NEW YEAR HONOURS

OF the four new medical knights who work in these islands, Dr. Greig Anderson, of Aberdeen, receives his promotion in the Royal Victorian Order by reason of his position as physician to Her Majesty's Household in Scotland, but his knighthood could as fittingly recognise his position among his colleagues and his services to old people. Mr. Mercer, who in 1948 became the first professor of orthopædic surgery at Edinburgh, was chosen by his fellows in the Royal College of Surgeons of Edinburgh to be their president in this memorable year of the 450th anniversary of its origin. Mr. Victor Negus, whose name has long been known wherever laryngologists or King's College Hospital men forgather, is a surgeon who has never ceased to be a biologist and has thereby learned much and taught much. Professor Zuckerman, of Birmingham, simultaneously anatomist, physiologist, educationist, and much else besides, has combined a fruitful academic career with forms of national service including the study of ballistics in war and the direction of scientific policy in peace. Overseas, Sir Arthur de Silva, consulting surgeon in Colombo, becomes K.C.M.G., Dr. Paul Boffa is knighted for public services in Malta, and Dr. S. L. A. Manuwa, descendant of rulers and now chief medical adviser to the federal government of Nigeria, adds the honour of knighthood to the many others he has gained since the day in 1926 when he graduated at Edinburgh. In congratulating these and many other doctors whose names appear on p. 40 we must also express the pleasure that many will feel at the knighthood conferred on Mr. George North, LL.D., who as Registrar General has shown himself so helpful a collaborator in the work of our profession.

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Special Articles

THE EPIDEMIOLOGY OF LUNG CANCER IN NEW ZEALAND

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New Zealand is insular and remote. It was discovered and occupied by Polynesians about a thousand years ago. In the fourteenth century there was a major Maori invasion, and from then until the coming of Captain Cook in the late eighteenth century New Zealand had practically no contact with the rest of the world. This means that Europeans did not settle in the country until the mid-nineteenth century, and that when they did so they came (as they have continued to come) predominantly from Great Britain. Consequently persons, other than those of Maori extraction, born in New Zealand are predominantly of British descent.

Immigration has generally been continuous, and there exists in New Zealand today a numerous group of immigrants from Great Britain who can act as natural controls, being essentially of the same stock and now living under similar conditions and differing only in the fact that they have spent part of their lives in Great Britain before coming to New Zealand. Moreover, it is possible to divide these immigrants into groups according to their age on entry and hence according to the degree of exposure to another environment before coming to New Zealand. If this different environment which they experienced during the earlier years of life had an effect on the risk of contracting cancer it should be reflected in differences in mortality between those born in New Zealand and those born in Great Britain, and between those in the immigrant group who came to New Zealand after a substantial period of residence in Great Britain and those who came at an earlier age.

Method

This study was made on deaths from cancer of various sites in immigrants from the United Kingdom and in the New Zealand-born non-Maori population in 1949–53. The population at risk was taken as the Census Population of 1951. It was confined to those aged 35 or more.

Expected deaths were calculated on the basis of these figures, and the significance of differences between the expected and observed deaths was assessed in terms of χ^2.

TABLE I—EFFECT OF "URBANISATION" ON DEATH-RATES FOR CANCER OF VARIOUS SITES

Areas arranged according to "degree of urbanisation"	All sites except lung			Stomach			Large intestine			Rectum		
	No. of deaths observed	No. of deaths expected	Degree diff.	No. of deaths observed	No. of deaths expected	Degree diff.	No. of deaths observed	No. of deaths expected	Degree diff.	No. of deaths observed	No. of deaths expected	Degree diff.
Total ..	7646			1353			1000			451		
Auckland Urban Area ..	1413	1363·9	..	223	238·1	..	169	180·4	..	81	80·1	..
Wellington Urban Area ..	798	738·3	+	127	125·1	..	111	97·4	+	40	42·9	..
Christchurch Urban Area..	902	827·1	+	150	141·5	..	118	109·2	..	52	48·4	..
Dunedin Urban Area ..	542	506·9	+	88	89·0	..	73	68·2	..	37	29·8	+ +
Other Urban, N.I.	815	811·0	..	150	143·0	..	92	107·0	−	58	47·7	+ +
Other Urban, S.I.	364	373·8	..	73	66·2	+	54	49·5	..	16	22·1	− −
Remainder, N.I.	1539	1732·2	− −	296	309·7	..	211	221·6	..	89	102·6	−
Remainder, S.I.	1273	1292·0	..	246	237·4	..	172	166·7	..	78	77·4	..

	Lung			Tongue, mouth, and pharynx			Larynx			Female breast		
Total ..	632	632		136			79			874		
Auckland Urban Area ..	143	106·7	+ + +	35	24	+ + +	17	16	..	155	163·3	..
Wellington Urban Area ..	69	59·5	+	6	15	..	6	9	..	114	92·1	+ +
Christchurch Urban Area..	72	64·8	+	12	15	..	5	7	..	109	99·3	..
Dunedin Urban Area ..	43	37·1	+	9	9	..	7	5	..	52	61·2	−
Other Urban, N.I.	67	64·0	..	15	14	..	9	8	..	103	94·9	..
Other Urban, S.I.	25	29·0	−	4	6	..	3	4	..	50	43·7	+
Remainder, N.I.	113	157·2	−	28	32	−	12	18	..	154	186·0	−
Remainder, S.I. ..	100	113·7	− −	27	21	+ +	20	12	..	137	133·5	..

	Cervix uteri			Prostate gland			Skin		
	No. of deaths observed	No. of deaths expected	Degree diff.	No. of deaths observed	No. of deaths expected	Degree diff.	No. of deaths observed	No. of deaths expected	Degree diff.
Total ..	268			408			79		
Auckland Urban Area ..	64	49·6	+ +	72	68·9	..	11	13·8	..
Wellington Urban Area ..	31	28·5	..	42	33·2	+ +	2	7·0	..
Christchurch Urban Area..	35	30·5	+	57	41·3	+ + +	10	8·1	..
Dunedin Urban Area ..	16	16·3	..	32	25·7	+ +	6	5·2	..
Other Urban, N.I.	31	29·0	..	36	42·7	−	4	8·4	..
Other Urban, S.I.	9	13·2	..	17	19·5	..	5	3·8	..
Remainder, N.I.	53	58·1	..	77	98·3	− −	23	18·4	..
Remainder, S.I.	29	40·8	− −	75	78·4	..	18	14·3	..

Degree of Difference Column

The percentage difference between the expected and observed numbers of deaths is represented by the following equation:

$$\frac{\text{Observed no. of deaths} - \text{Expected no. of deaths}}{\text{Expected no. of deaths}} \times 100$$

Where (*a*) expected number of deaths is less than 20, or (*b*) percentage difference is less than (i) 5% for "all sites except lung" / (ii) 10% for other sites } the column is left blank.

Where percentage difference is (i) 5% but less than 10% for "all sites except lung."
(ii.) 10% but less than 20% for other sites—it is noted by − or +.

Where percentage difference is (i) 10% but less than 15% for "all sites except lung."
(ii.) 20% but less than 30% for other sites—it is noted by − − or + +.

Where percentage difference is 30% or more it is noted by + + +.

Immigrants tend to settle more often in towns than in the country, in the larger towns than in the smaller, and in the North Island more often than in the South Island. It has been reported from other parts of the world (Stocks 1947, Spiegelman 1952) that the incidence of certain forms of cancer is higher in some regions than others in accordance with the degree of urbanisation. The data were therefore used in the first place to assess whether any similar differences existed in New Zealand. For this purpose the following areas were chosen: the major urban areas of Auckland, Wellington, Christchurch, and Dunedin, with populations near to, or greater than, 100,000; aggregates of other urban areas in the North and in the South Islands with populations of 20,000 or more; and the remaining areas in each of the two principal islands. Comparisons between towns and localities were based solely on deaths in those of New Zealand birth, and were, of course, allocated to the usual place of residence of the deceased.

The following sites were considered at first, as well as deaths from cancer of all sites: stomach, large intestine, rectum, lung and bronchus, breast, cervix uteri, prostate, and skin (other than malignant melanoma). Important unequivocal differences were found, however, in lung and bronchus only. It was therefore decided to take out figures for other parts of the respiratory tract. Accordingly larynx was added; and tongue, mouth, and pharynx were taken together.

Comparison was based on the actual and expected deaths for each of the sites chosen in the age-groups 35–, 45–, 55–, 65–, and 75+, the expected deaths being calculated in each locality on the basis of the rates for the New Zealand-born population as a whole; the figures for the separate age-groups were then added together.

The only site that showed consistent differences in mortality in the areas considered was lung and bronchus, where a significant increase with urbanisation was shown in both males and females (table I).

Though a consistent or significant urban bias is not seen in the separate sites other than lung there is such a bias for all other sites taken together. It is smaller than in the case of lung but, in view of the numbers involved, may be considered significant.

Accordingly, in assessing differences between those who were born in New Zealand and those who were born in the United Kingdom, the expected deaths were calculated for each area and then added together to allow for differences in the geographical distribution of the immigrant population compared with the indigenous population, though such differences in practice were found to have a negligible effect on mortality for any site other than bronchiogenic cancer.

TABLE II—OBSERVED AND EXPECTED MORTALITY FOR CANCER OF CERTAIN SITES ACCORDING TO WHETHER BORN IN NEW ZEALAND OR BORN IN THE UNITED KINGDOM

Site of cancer	Where born	Observed no. of deaths	Expected no. of deaths	Significance of difference between observed and expected*
All (less lung)	N.Z.	7646	7628·4	
	† U.K.	3005	3022·6	N.S.
Stomach	N.Z.	1353	1342·6	
	† U.K.	573	582·4	N.S.
Large intestine	N.Z.	1000	1015·4	
	U.K.	426	410·6	N.S.
Rectum	N.Z.	451	448·7	
	U.K.	182	184·3	N.S.
Lung	N.Z.	632	721·8	
	U.K.	369	279·2	$p < 0·001$
Tongue, mouth, and pharynx	N.Z.	136	138·1	
	U.K.	61	58·9	N.S.
Larynx	N.Z.	79	80·5	
	U.K.	36	34·5	N.S.
Female breast	N.Z.	874	876·8	
	U.K.	281	278·2	N.S.
Cervix uteri	N.Z.	268	271·1	
	U.K.	82	78·9	N.S.
Prostate gland	N.Z.	408	427·4	
	U.K.	252	232·6	N.S.
Skin	N.Z.	79	76·5	
	U.K.	34	36·5	N.S.

* Based on χ^2.

TABLE III—OBSERVED AND EXPECTED MORTALITY FOR CANCER OF CERTAIN SITES IN IMMIGRANTS ACCORDING TO WHETHER THEY ENTERED NEW ZEALAND BEFORE OR AFTER THEIR THIRTIETH BIRTHDAY

Site	Age on immigration (yr.)	Observed no. of deaths	Expected no. of deaths	Significance of difference between observed and expected*
All (less lung)	Under 30	1730	1787·4	
	30 +	1251	1193·6	$·05 > p > ·02$
Stomach	Under 30	319	334·3	
	30 +	244	228·7	N.S.
Large intestine	Under 30	239	244·8	
	30 +	179	173·2	N.S.
Rectum	Under 30	106	103·1	
	30 +	68	70·9	N.S.
Lung	Under 30	187	231·8	
	30 +	168	123·2	$p < 0·001$
Tongue, mouth, and pharynx	Under 30	28	36·0	
	30 +	30	22·0	$p = 0·05$
Larynx	Under 30	16	18·0	
	30 +	12	10·0	N.S.
Female breast	Under 30	157	165·5	
	30 +	120	111·5	N.S.
Cervix uteri	Under 30	44	47·4	
	30 +	34	30·6	N.S.
Prostate gland	Under 30	143	145·0	
	30 +	98	96·0	N.S.
Skin	Under 30	19	16·9	
	30 +	10	12·1	N.S.

* Based on χ^2.

Findings

The numbers of deaths of New Zealand-born persons and of immigrants from the United Kingdom, and the expected deaths of the two groups on the assumption that there is no difference in the incidence between them, are given in table II.

The assumption holds good for all forms of cancer except that of lung and bronchus. In the latter site the immigrant group has a much higher incidence of bronchiogenic cancer than would be expected on the basis of equity, suggesting that for this site, and this site alone, the immigrant has an increased susceptibility.

The United Kingdom-born were next divided into two groups according to the age at entry into New Zealand, those under 30 at the time of entry being placed in one group and those aged 30 or more being placed in the other group. There was a small residue of persons whose age on immigration had not been stated.

The observed deaths and the deaths expected on the hypothesis that age at time of entry to New Zealand has no effect on the risk of dying are shown in table III.

There is nothing to conflict with this hypothesis in any site except again lung. For all cancer, other than of lung and bronchus, taken together there is a suggestion that the incidence is higher in those who were over 30 on immigration; the difference, about 5% above the expected value, is of doubtful significance. It is not of the same order as the 46% seen in the case of the lung. Possibly the difference is partly due to exclusion of a few persons whose age at entry was not stated. Such persons numbered 14 in the case of lung and bronchus, and 76 for all other cancer; the number of immigrants from the United Kingdom whose age at entry was not stated at the time of the census in 1951 was 1723.

Lest it might be thought that a similar consideration can explain the difference in the case of cancer of the lung, all 14 persons whose age on entry was unstated were allocated to those who were under 30 at the time of immigration, and the 1723 of the population whose age at entry was likewise unknown were allocated to those who were 30 or over when they came into the country. This minimises the difference between the two groups, but it is unlikely that the persons concerned would be distributed in this extreme manner. Nevertheless the

difference is still found to be significant; the observed and expected values now become as follows:

Age at entry	*Actual deaths*	*Expected deaths*	*Significance of difference*
Under 30	201	229·2	$0{\cdot}01 > p > 0{\cdot}001$
30 or more	168	139·8	

Discussion

Immigrants to New Zealand from the United Kingdom have a higher incidence of lung cancer than New Zealand-born persons of the same stock. The difference is greater in those who were aged 30 or more when they came to New Zealand. This increased incidence is unlikely to be an artefact, for it is not seen in any other of the principal sites for cancer. Moreover, it is the same for women as for men and is consistent at all ages over 35 and for all the principal parts of the country.

The chances of dying of cancer of the lung are 30% higher for all United Kingdom immigrants, but for those who were 30 years of age or more on entering New Zealand the risk is 75% higher. This is in agreement with the differences in the death-rates from cancer of the lung in the two countries (see table IV).

There has been a continued increase in New Zealand in the numbers of male deaths at all ages certified as due to lung cancer, but the incidence has always been substantially below that in England and Wales. The peak of incidence in England and Wales is in the age-group 55–64 during the two earlier periods, whereas in New Zealand it has always been in the group a decade older.

Owing, at least so far as New Zealand is concerned, to the small numbers involved at the extremes of the age-distribution shown, deaths from lung cancer in females are subject to much random fluctuation. There appears, however, to be little if any increase in those below the age of 45, but there is a steady increase thereafter. The New Zealand figures roughly parallel the English figures; but, as in the male, the death-rates are well below those in England and Wales.

The conclusion follows that immigrants from Great Britain to New Zealand are affected by their former environment and that this effect is related to the length of exposure in that environment. It shows itself in an increase in lung cancer but not in cancer of any other site.

Differences in habits of tobacco-smoking are unlikely to contribute to this picture. Consumption of tobacco in the two countries for the first half of this century is shown in table V.

The environmental factors concerned are unlikely too to be of a personal kind related to the way of life of the immigrant, for this would make it difficult to explain the differences between the younger and the older immigrants.

The evidence points to the factors being associated with urbanisation, as has been suggested in other studies (Kennaway and Kennaway 1951, Stocks 1952). It shows too that they may exert their carcinogenic effect a long time after the person has been removed from them, and this is in keeping with what is known of the mode of action of the carcinogens isolated from the atmosphere of industrial cities (Leiter et al. 1942, Waller 1952).

I record my thanks to Dr. F. Bielschowski, director of cancer research, Otago University, for his invaluable advice and friendly encouragement; and to Dr. J. Cairney, director-general of health, New Zealand, for permission to publish.

TABLE IV—AVERAGE YEARLY DEATH-RATE PER MILLION PERSONS FROM CANCER OF THE LUNG 1932–53 IN NEW ZEALAND COMPARED WITH ENGLAND AND WALES

Period	Country	Age-group (yr.)				
		35–44	45–54	55–64	65–74	75 or more
		Males				
1932–36	N.Z.	13	87	158	204	62
1937–41	N.Z.	33	108	235	283	213
1940–41	England and Wales	126	424	802	715	448
1942–46	N.Z.	46	168	466	635	326
	England and Wales	132	466	1072	1032	527
1947–51	N.Z.	43	287	734	1014	735
	England and Wales	166	781	1682	1857	1073
1952–53	N.Z.	61	305	1027	1456	1110
	England and Wales	175	858	2171	2650	1688
		Females				
1932–36	N.Z.	14	37	65	95	48
1937–41	N.Z.	8	18	60	121	76
1940–41	England and Wales	26	75	151	220	212
1942–46	N.Z.	19	30	81	111	198
	England and Wales	34	83	165	247	225
1947–51	N.Z.	13	37	93	156	240
	England and Wales	39	102	211	337	320
1952–53	N.Z.	15	67	132	185	178
	England and Wales	40	109	245	354	422

TABLE V—YEARLY CONSUMPTION OF TOBACCO (LB.) PER HEAD

Year	New Zealand	United Kingdom
1900	2·3	1·95
1910	2·69	2·22
1920	3·59	2·99
1930	3·28	3·31
1940	3·87	3·97
1950	5·36	4·22

Source: Government Statistician, New Zealand.
High Commissioner for United Kingdom in New Zealand.

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VITAMINS OF THE B COMPLEX

THE nutrition panel of the food group of the Society of Chemical Industry held on Dec. 14 the second meeting of a series concerned with Nutritional Requirements and Food Fortification.[1] Vitamins of the B Group were dealt with under nutritional requirements, dietary supplies, and food fortification.

Dr. H. M. SINCLAIR discussed nutritional requirements. He said that the B.M.A. figures covered requirements for the average person but individual requirements were affected by race, age, sex, and the other components of the diet. The type of carbohydrate affected the requirements of thiamine by influencing the intestinal flora. In addition the state of health might affect the absorption (for example, in pernicious anæmia, or by losses through vomiting and diarrhœa) and the use (for example, in fever and hyperthyroidism).

Thiamine was required for the oxidation of carbohydrate at the level of 0·4 mg. per 1000 calories. The requirements were increased considerably in old age; the reason for this was unknown. The requirements of riboflavine were affected by alterations in the amount of fat and protein in the diet, probably because of change in the intestinal flora. Although there was no evidence that the requirements were linked to calorie expenditure the B.M.A.'s recommendations suggested 0·6 mg. per 1000 calories. On the other hand the U.S. National Research Council linked the riboflavine requirements with the protein intake; but Dr. Sinclair pointed out that there was no clear reason for doing so. Nicotinic acid was required for the oxidation of fat and carbohydrate, and the recommended intake was 4 mg. per 1000 calories. The requirements were influenced by the level and type of protein in the diet since tryptophan could be converted into nicotinic acid. Carcinoid tumours produced large amounts of serotonin from tryptophan, and pellagra developed in some patients because of this loss of tryptophan. Nothing was known of the requirements of

1. See *Lancet*, 1955, ii, 1184.

vitamin B_6, but deficiencies did occur and diets were probably marginal. Peripheral neuritis had been observed in tuberculous patients treated with isoniazid, due to combination of this drug with pyridoxine, and possibly many other drugs could behave similarly.

Miss A. M. COPPING dealt with dietary supplies. The average intakes of thiamine, riboflavine, and nicotinic acid were a little above the recommended average intakes. About a third of the thiamine and nicotinic acid were provided by bread and cereals, and 40% of the riboflavine by milk and cheese. Since much of the B vitamins in wheat was contained in the outer endosperm and germ, the B-vitamin content of flour increased with the extraction-rate. Other members of the vitamin-B complex, including B_6, B_{12}, biotin, and folic acid, were fairly widely distributed in foodstuffs and were likely to be in reasonable supply, although nothing precise was known as to the requirements.

Thiamine was partly destroyed by heat, especially in alkaline solution, and the Ministry of Food tables allowed 15% for the loss of this vitamin. Riboflavine was relatively stable to cooking, but was destroyed by light, and milk exposed to light lost a considerable amount.

Mr. J. B. M. COPPOCK, PH.D., discussed food fortification. The present white loaf, which appeared to be preferred by the public, was fortified with thiamine and nicotinic acid to the level of these vitamins found in flour of 80% extraction. In the United States levels of enrichment were about three times those enforced in this country, and included the addition of riboflavine; Dr. Coppock suggested that British practice was restoration rather than enrichment.

The enrichment of rice with thiamine was carried out by soaking rice grains in a solution of the vitamin and adding 1% of this master-mix to the main bulk of the rice. The alternative was to spray the rice with a solution of the vitamin protected by a film coating which resisted washing.

Dr. Coppock pointed out that serious losses of vitamin B_1 occurred during the washing and cooking of rice, amounting to 20–90%; and there was, on the average, a 20% loss on baking bread. Recent work had shown that this loss occurred with patent and whole-meal flour and was independent of prior treatment with bromate or chlorine dioxide. The losses seemed to depend solely on the temperature reached; thus, in the case of toast, losses were greater with thinner slices. The loss of thiamine in bread, cake, and biscuits was related to the internal temperature reached during baking. Dr. Coppock pointed out that the thiamine content of bread, after allowing for baking losses, was little more than adequate for the calories contained in that bread and did not provide any excess for the rest of the diet. The fall in bread consumption suggested the need for an upward trend in fortification.

In the discussion Dr. SINCLAIR pointed out that the removal of nutrients and the restoration of only some of these nutrients was unsatisfactory. For example, deficiencies of pyridoxine might arise, and pantothenic acid was essential to man; and the National loaf contained seventy times as much manganese as the 70% extraction loaf. In reply to a question whether riboflavine should be added to the white loaf, Dr. Sinclair said that the conference on the post-war loaf had agreed not to add this since bread was not an important source of riboflavine, contributing only 12% of our intake. He pointed out that in poor families with many children bread would be a more important source of riboflavine, and when asked his opinion he agreed that this vitamin should also be added to white bread.

Mr. A. E. BENDER, PH.D., asked what levels of intake of vitamins were desirable to ensure not only that the average intake was above the required level but that the greater part of the population received more than this level. Miss D. F. HOLLINGSWORTH replied that this question could not be answered since so little was known of the individual variation both of requirements and of intake. She added that the intake of riboflavine did not include the losses in milk exposed to light.

In reply to a question on the influence of different carbohydrates on the intestinal flora, Dr. SINCLAIR said that there was experimental evidence that thiamine deficiency developed more readily with sucrose in the diet than with starch or glucose. Volunteers on a diet deficient in vitamin B_1 had shown signs of deficiency when the carbohydrate was sucrose but not when it was dextro-maltose. This was apparently due to synthesis of the vitamin in the gut.

NEW YEAR HONOURS

THE list of honours published on Jan. 2 contains the names of the following members of the medical profession:

K.C.M.G.

Sir ARTHUR MARCELLUS DE SILVA, C.B.E., F.R.C.S.
Member, Public Service Commission, Ceylon; consulting surgeon, General Hospital, Colombo.

K.C.V.O.

ALEXANDER GREIG ANDERSON, C.V.O., M.D., LL.D. Aberd., F.R.C.P.

Knights Bachelor

PAUL BOFFA, O.B.E., M.D.
For public services in Malta.

SAMUEL LAYINKA AYODEJI MANUWA, C.M.G., O.B.E., M.D., LL.D. Edin., F.R.C.S.E.
Chief medical adviser, federal government, Nigeria.

WALTER MERCER, M.B. Edin., hon. F.A.C.S.
Professor of orthopædic surgery, University of Edinburgh; president of the Royal College of Surgeons of Edinburgh.

VICTOR EWINGS NEGUS, M.S. Lond., hon. D.SC. Manc., F.R.C.S., hon. F.R.C.S.E.
Consulting surgeon, ear, nose, and throat department, King's College Hospital, London.

SOLLY ZUCKERMAN, C.B., B.A. Cape Town, M.D. Birm., D.SC. Lond., F.R.S.
Deputy chairman, Advisory Council on Scientific Policy; Sands Cox professor of anatomy, University of Birmingham.

C.B. (Military)

Major-General FREDERICK CAVENDISH HILTON-SERGEANT, C.B.E., M.B. Lpool, Q.H.P.

Surgeon Rear-Admiral ROBERT CYRIL MAY, O.B.E., M.C., M.R.C.S.

Major-General FRANCIS JOSEPH O'MEARA, M.D. Dubl., F.R.C.P.I., Q.H.P.

C.B. (Civil)

EDWARD ROLAND ALWORTH MEREWETHER, C.B.E., M.D. Durh., F.R.C.P.
Senior medical inspector of factories, Ministry of Labour and National Service.

C.M.G.

JAMES LESLIE MCLETCHIE, O.B.E., M.B. Glasg.
Director of medical services, Eastern region, Nigeria.

GEORGE DOUGLAS ROBB, M.D., CH.M. N.Z., F.R.C.S., F.R.A.C.S.
Consulting surgeon, Auckland, New Zealand.

KOK CHEANG YEO, M.D. Hong-Kong.
Director of medical and health services, Hong-Kong.

C.V.O.

STAFFORD ERIC SAINT, M.R.C.S.

C.B.E. (Military)

Air Commodore GLEN ALBYN MARTIN KNIGHT, M.B. Melb., R.A.F.

C.B.E. (Civil)

JOSEPH EDWARD DEBONO, M.D. Malta, F.R.C.P.
Professor of medicine, University of Malta; for medical services in Malta.

HUGH MONTAGU CAMERON MACAULAY, M.D. Lond.
Senior administrative medical officer, North West Metropolitan Regional Hospital Board.

CHARLES GEORGE MCDONALD, CH.M. Sydney, F.R.A.C.P.
Consulting physician, Royal Prince Alfred Hospital, Sydney, New South Wales.

CHARLES TITTERTON MAITLAND, M.D. Lond., F.R.C.P.
Principal medical officer, Ministry of Health.
ROLAND NIGHTINGALE, M.B. Manc.
President of the Association of Certifying Factory Surgeons; factory doctor for Stockport district.
LAWRENCE WILLIAM PLEWES, M.D. Toronto, F.R.C.S.E.
Consulting orthopædic surgeon, Luton and Dunstable Hospital.
HENRY CAMPBELL WILKINSON, M.D.
Lately director of health services, Bermuda.
KATHARINE GEORGINA LLOYD-WILLIAMS, M.B. Lond., F.F.A. R.C.S.
Dean, Royal Free Hospital School of Medicine, London.

O.B.E. (Military)

Surgeon Commander HERBERT LEWIS BELCHER, M.R.C.S., R.N.
Lieut.-Colonel AUSTIN BERNARD DEMPSEY, F.R.C.S., R.A.M.C.
Lieut.-Colonel TERENCE RICHARD JANSEN, M.B.E., E.D., Ceylon Army Medical Corps.
Lieut.-Colonel DOUGLAS DUNDAS MAITLAND, L.R.C.P.E., R.A.M.C.

O.B.E. (Civil)

GERALD HENRY COORAY, M.B.E., M.D. Lond.
Professor of pathology, University of Ceylon.
THOMAS DAVIES, B.SC. Lond. and Wales, M.R.C.S.
Chairman, medical recruiting board, Cardiff, Ministry of Labour and National Service.
KENNETH FRASER, M.D. Edin.
County medical officer, Cumberland.
RICHARD JOHN BURNSIDE HALL, M.B. N.Z., F.R.C.S.E., F.R.A.C.S.
Medical superintendent, Cook Hospital, Gisborne.
WILLIAM CHARLES BURKE HARRISON, L.R.C.P.I
Director of medical services for Northern Rhodesia, Federation of Rhodesia and Nyasaland.
JOHN SWINTON MEREDITH, M.B. Glasg.
Medical specialist, Tanganyika.
WILLIAM LEATHLEY NICHOLSON, M.B. Manc.
Senior medical officer, Ministry of Pensions and National Insurance.
WILLIAM MATHIAS QUIN, M.B. Edin., F.R.C.S.E.
Lately senior surgical specialist, Sierra Leone.
CHARLES MCCONAGHY ROSS, M.B.
Senior leprosy officer, Northern region, Nigeria.
IAN NORMAN SAMUEL, M.R.C.S.
For political and public services in Battersea.
HAROLD GRIFFIN VYSE, M.R.C.S.
Chairman, Royal Air Force Benevolent Fund Committee in Jamaica.

M.B.E. (Military)

Captain HAMISH COATES NEALE, R.N.Z.A. M.C.

M.B.E. (Civil)

ROBERT ASHLEIGH GLEGG, M.D. Edin.
Hon. secretary, East Sussex County Housing Association for the Aged.
HARRY HAIGH, M.B. Camb.
For medical services, Eastern region, Nigeria.
GLADYS CHEE ING HU.
For medical services in Singapore.
CENYDD RICHARDS JONES, M.B. Wales.
Amerindian medical officer, British Guiana.
EMERIC LOSONCZI, M.D. Naples.
Medical officer of health, British Honduras.
ALEXANDER GOW MEARNS, M.D. Glasg.
Senior lecturer, department of public health and social medicine, University of Glasgow.
DOREEN ANNE MURRAY, L.R.C.P.E.
Resident medical officer, Colony Hospital, Granada, Windward Islands.
OWOLABI ANIFOSHE OMOLOLU, M.B. Edin.
School medical officer, Lagos, Federation of Nigeria.
GEORGE EDWARD RANAWAKE, M.R.C.S.
Secretary, Hospital Lotteries Board, Ceylon.
JAN ZYGMUNT SLOMINSKI, M.B. Polish Sch. Med., Edin.
District medical officer, Carriacou, Windward Islands.
EDMUND NATHANIEL OYEKANMI SODEINDE, M.D.
Senior medical officer (clinical), Federation of Nigeria.
CONRAD EVAN ELWIN STEVENS, M.B. Belf., F.R.C.S.E.
Medical superintendent, Cunningham Hospital, St. Kitts, Leeward Islands.
WILLIAM ERNEST STORK WINN, L.R.C.P.E.
For public services in Kandy, Ceylon.

The Widdicombe File

XXX. THE MEDICAL CURRICULUM

DEAR WILL,

You ask me to write to your young nephew and to give him some idea of what he will have to expect during his studies if he should take up medicine. Nothing would give me greater pleasure—but only if I had as interesting an account to give him as you generously but quite wrongly assume that I must have. For the truth is that his curriculum will be surprisingly similar to that from which you yourself emerged with distinction 25 years ago. Because the curriculum is still very much what it was, there's only one thing that I'd like to tell him, and it's this: work well enough to pass but do not overwork to gain distinction.

Defenders of the curriculum sometimes argue that those who criticise it are merely saying that there are many disappointing students—many who are lazy or too poor in intelligence or general education to get much good from any course of study. But I refute that with three pieces of personal evidence.

First, our students' medical society—bless it—has been sending its members to departments, for elementary demonstrations and discussions, as much as one and two years before they reach the subject in question in the normal course of their studies. Over and over again I have heard my colleagues say what I have myself observed—namely, that the students show far more keenness and are far more observant and able to discuss things well at these early informal demonstrations than when, one or two years later, they come to the subject as a class. They are steadily losing interest.

My second bit of evidence is that I have taken on as assistants a number of men whose undergraduate records were far from good, although none of them was rank bad. Some have remained only moderate performers; but more of them have suddenly come to life, confessed to a first awakening of interest in their books, and shown that—freed from our teaching and examination programme—they had it in them all the time to be really keen students of medicine.

Thirdly, what effect has the curriculum on those who bend themselves the most willingly to its demands and manage to stay the course to the end? Three of our year, you will remember with modest pride, attained the eminence of graduating with distinction.

Pringle, the first of us in the order of the prize-lists, went straight off to be house-surgeon to the professor—Honest John—and was so disillusioned by that good man's ignorance that he pledged himself to the physiology department as soon as his year in hospital was up. Unfortunately he had worked so hard and so consistently as a student that he was, unknown to himself, dangerously sensitised to professors and textbooks—with the result that he left physiology in 3 months to take a job in an obscure provincial hospital, from which he has not moved to this day. He is now a full-time consultant physician and is known locally as a sound chap with a surprising range of knowledge. But he never publishes anything, he does no research, and he makes too little use of his brilliant gifts for analysis of really hard problems and for logical exposition. His undergraduate devotion to the curriculum killed his fire and arrested his intellect. You may say that making himself a distinguished student cost him his academic soul.

I need not dwell on my own story, for you know it in full. But I should remind you that for 8 years after graduation I went from one thing to another, mighty uncertain what I wanted to do and finding nothing that I was keen to work at with real devotion. At that stage my experimental probing took me back to a post in our old school; but I should pretty certainly have left that

also if I hadn't been given leave of absence to join the Army at the outbreak of war. Six years in different parts of the world and in an extraordinary variety of situations seemed to neutralise most of the harm which I suffered from being a diligent student. After the war I returned to my hospital and academic duties with real zest for the work, and my life would now be a thing of unclouded happiness if only I could adjust my expenditure to the hard fact that my net income is less than half of my gross earnings. But seriously I should estimate that it required 8 years of restless seeking and a war to rescue me from the harm that was done to me from taking the curriculum seriously.

You yourself, to all appearances, suffered least of the three of us from your medical studies. For you laughed off your academic distinctions as an outrageous fluke and went straight into general practice in your own village. I think that you came off best because in fact as a student you followed your own curriculum and indeed learned your medicine in your long vacations. You dodged all the poor lecturers, although you went to practical classes and clinics; but I never saw you around the hospital in the holidays. When I stayed with you in the summer of 1928 I remember that you then had two chief activities outside your duties as a fast bowler for the village eleven: all unqualified, you took Dr. Battersby's surgeries and made a great many of his visits on any day when he and his friend the village stationmaster concluded that the water and the wind were right for trout-fishing; and sitting in the study of the Rev. William Smart, you composed thrilling sermons which that wise old gentleman was glad to deliver after he had purged them of their worst heresies. By these vacation activities you gained for yourself two things that the curriculum could never have given you: first, a real acquaintance with the whole problem with which the illness of one of its members confronts a family; and second, a taste for, and training in, the use of books and periodicals and the orderly expression of your thoughts.

Modern developments, of course, have probably made it dangerous for you to let your nephew attend your patients until he is qualified and has joined a medical defence society. They have probably also deprived you of a railway station and thus of a companion with enough control of his summer days to go fishing with the doctor. And I should not be surprised if most parsons think it better to write their own sermons, because of the news value that now attaches to their pulpit indiscretions—as well as to their others, which have always been good for two half-columns and a photograph.

So your nephew may necessarily be thrown back on the curriculum, and it's just what it was before except that it now demands one year extra before graduation and two before registration. It allows less free time for personal study, and has led to examinations that more searchingly probe a student's store of facts but less certainly ascertain whether he can safely be trusted with a patient's life.

For years now the Faculty has been listening to pleas for a few more hours for this, and for many more hours for that. Each teacher applying for more time has a good case: who can deny a plea based on the evident truth that a great deal more is now known about nucleic acids, steroid hormones, chemotherapeutic agents, viruses, psychiatric disorders, anæsthetics, neurosurgery, isotopes, radiology, neoplasms, and all the rest? If the teacher is a good fellow who seems likely to make a lively impact on the student, the Faculty gives him most of what he asks for; if he's a fairly ordinary pedagogue he is given a half or less; and if he seems a dull stick he's turned down flat or kicked around the subcommittees until his plea is lost. So there is a certain rough justice and often approximate wisdom in what the Faculty does.

But there's never real wisdom. For we never—or very seldom—cut anything out. Worst of all, we never ask ourselves what we think we are doing. Last week I went to the Faculty with a plea for a little more time to let me deal half decently with the fundamentals of antibiotics and viruses. Conscious of, and feeling rather guilty about, what I was doing, I coupled my plea with the proposal that the Faculty members should meet informally—without anybody's requests specifically before them—so that we could tell each other, in five minutes each, what we were aiming at in our teaching and roughly what ground we each covered. I thought that we might then be able to see my plea, and those of others, in perspective. I hoped we might face it that we are now asking 7 years of a boy's life after he leaves school before we turn him into his 2 years as a National Service medical officer. I hoped that we might recall that we once made quite good doctors in 5 years and even in 4 years. Everyone agreed in principle. There was even a witty suggestion that we could probably devise a 3-year curriculum if we sent each professor out of the room in turn and left the others to decide how much time his subject required. I said that I was seriously worried about merely adding to the students' burden by asking for extra teaching time even for new topics of obvious importance—but they gave it to me out of the "free time." My proposal for an informal meeting was turned down because, as the anatomist truly said, so radical an examination of the curriculum would certainly need more than one meeting.

But surely we shall have to face it. Much as I personally shrink from change, I believe that we must turn things upside down because I think that our curriculum is now a bad one. I believe that students should be seeing at least a few patients in their first year of study, and hearing something about nucleic acids in their last; I think that lecturers capable only of dictating notes must be proscribed; and I think that we should need at the most 5 years of undergraduate study (including that for the first M.B.) and 1 postgraduate year as a resident in hospital before registration. I believe that we must examine the case for a basic minimum of study for all, with the rest of the curriculum set out as elective courses with the subjects in sensible groupings: I think that we must give the student greater incentives to study on his own and more chances to take fully responsible care of patients. I'd like to see the General Medical Council decree a 20-year period of experiment on these lines, leaving schools to work out their own solutions. Details of these experiments would, of course, be made known to the G.M.C., and the results could be assessed by visitors and perhaps by some form of national examination conducted anonymously and based upon methods of testing separately knowledge of facts, capacity for self-expression, and ability to deal with clinical problems as presented by the cases of actual patients.

We have had enough deliberation about better medical education. Our discussions have led us from fairly unsatisfactory to bad. Are we to leave it to our American colleagues to make the only modern experiments in medical education? Let us agree the objects of our own experiment and for goodness sake let us get on with them, each school making in all probability some horrid mistakes and some real discoveries.

If we enter such a phase of experiment I'll write an enthusiastic letter to your nephew. But if we rumble on as at present I'll only caution him that he must weigh the examinations carefully to ensure that he does not suffer from exposing himself innocently to our gross over-instruction which certainly leads to progressive and visible dis-education. Unless we are ordered to mend our ways—for we seem incapable of doing it ourselves—he must do all that he can to side-step the results of our excessive earnestness and defective imagination.

Yours,
JAMES DAVEY.

Public Health

REPORT ON ATMOSPHERIC POLLUTION

THERE is no doubt that this country's air has been increasingly polluted during the past fifteen years by grit and dust: there is less certainty about the increase in pollution by smoke and oxides of sulphur, and the recent report [1] of the Department of Scientific and Industrial Research contains some contrary evidence in that it records a small decrease in pollution by smoke and sulphur oxides. The report summarises the results of over a million measurements made during the past ten years—measurements made by local authorities and other organisations coöperating with the department's fuel research station. The number of these "measuring" authorities has lately shown a welcome increase from 80 to 220; and the number of measuring instruments in regular use has risen from about 200 to nearly 2000. The department deserves much praise for accomplishing the heavy task of analysing and collating this mass of measurements.

The amount of pollution of town air may be as much as forty times that in rural areas; and at times of smog the average level of pollution by smoke and sulphur may reach ten times the normal for the time of the year. There may be some increase in air pollution in country districts which goes undetected, for the huge power-stations which now consume much of the nation's coal throw out by forced draught through their high chimneys oxides of sulphur and not a little dust, to be windblown perhaps for many miles. The majority of measuring instruments are at present in congested towns, and there is a need for more measurements in rural areas. In addition, more daily-recording instruments are required so that important basic knowledge may be gained and serious smogs studied in detail.

Many of the instruments already in use are designed to investigate particular local sources of pollution such as steel, chemical, and cement works, electricity-generating stations, gas and coke works, various industrial boiler installations, railway-engine sheds, and colliery spoilbanks. It is good to read in the report of greater coöperation from industrial undertakings responsible for the emission of pollutants: an increasing number of industries are recognising their contribution to air pollution and some are taking the public more and more into their confidence.

Measurements of air pollution are also of value to central and local authorities in their various building and development schemes. Knowledge of the present levels of pollution is a help in planning for smoke abatement, and it will be of interest, when the "smoke control areas" envisaged in the Clean Air Bill come into operation, to assess the progress made towards safer air. It would be particularly useful to select one or more towns and make them entirely smokeless, thus providing a valuable means of studying the effects on health of a decisive reduction of air pollution.

An important result of the London smog of 1952 was the establishment of the committee on air pollution under the chairmanship of Sir Hugh Beaver; and the Department of Scientific and Industrial Research gave the committee valuable help. Among the important recommendations of the Beaver Committee was the extension of research into the many problems of air pollution and health. This would mean a considerable expansion of the research staff engaged in studying the relationships between various pollutants and the incidence of disease. Already some special surveys on the influence of air pollution on bronchitis, lung cancer, and other respiratory diseases are being assisted by the department.

Over five million tons of sulphur dioxide are discharged into the air of Great Britain each year, and this subject will need intensive examination. By each of our large electricity-generating stations as much as a million tons of coal may be burned each year. Another problem in which the department has helped and can help further is that of the tens of thousands of hand-fired boilers still used in industry—boilers which are not equipped to burn raw coal efficiently without producing excessive smoke. The special smoke-eliminator door developed by the fuel research station is inexpensive and simple to operate; it makes coal "work harder" by using it more efficiently, and it greatly reduces smoke.

Among other work described in this important report, there is that relating to the removal of oxides of sulphur from flue gas, the production of coke that will give a satisfactory fire even on an old-fashioned fire grate, research on domestic heating, and the testing of equipment, one of the objects of which is the more widespread use of stoves and grates that will allow a satisfactory smokeless fire with ordinary coke.

1. The Investigation of Atmospheric Pollution: a Report on Observations in the 10 years ended March, 1954. Department of Scientific and Industrial Research. H.M. Stationery Office. 7s. 6d.

London's Health in 1954

In his report [1] for 1954 Dr. J. A. Scott, county medical officer of health for London, refers to the increase in notifications of dysentery. The figure of 4268 notifications in the year was the highest ever recorded. The epidemic was already under way when the year began and came to its peak in April. The heaviest incidence was among children of preschool age, but there was a slightly increased proportion of cases among school-children compared with the previous year. Food-borne outbreaks of dysentery are at present very uncommon, and there is no evidence that the heavy incidence of recent years is due to food infection. An investigation of cases in 1952-53 showed that children under 15 were more likely to give rise to secondary spread, and more susceptible to secondary spread, than those over 15. Nearly half the cases notified had a clinical illness which was confirmed bacteriologically; less than a tenth were symptomless carriers; and two-thirds were in outbreaks of 2 or more associated cases. A clear association was shown between the severity of the primary case and the resulting spread. Where the infection was widespread, "sulphonamide appeared to present few advantages."

The *birth-rate* was 15·2 per 1000 population compared with 15·3 in 1953 and 1952, 15·6 in 1951, 15·7 in 1950, and 13·4 in 1938. The birth-rate, though well in excess of the pre-war and early war years, seems to have stabilised at a little below the average of the last 21 years. Since 1948 the still-birth-rate has remained relatively stable, and in 1954 there were 19·8 stillbirths per 1000 total births.

Since 1951 there has been a steady decline in the *death-rate* to the lowest figure ever recorded in London—10·7 per 1000 population in 1954. Heart-disease accounted for nearly one-third of the mortality and, although the death-rate from cancer showed a slight decrease from 2·34 per 1000 in 1953 to 2·31 per 1000 in 1954, it remained the second leading cause of death (a detailed examination of the course of lung cancer in London over the last 25 years appears as an appendix to the report).

The *infant-mortality rate* continued to decline and reached the lowest recorded figure of 20·7 per 1000 live births, compared with 23·9 per 1000 live births in 1953. Of these, 15·1 occurred in the first four weeks of life, which was also a record low figure and compared with 17·8 for England and Wales.

The total number of women *who died as a result of pregnancy or childbirth* (including post-abortion deaths) was 34, compared with 37 in 1953, 50 in 1952, and 42 in 1951.

The number of cases of *diphtheria* continues to decline, and in 1954 there were only 4 confirmed notifications and no deaths. There was a smaller incidence of *whooping-cough* than for some years past and there were only 4 deaths from this disease. The notifications of *scarlet fever* were the lowest recorded since 1941 and there were no deaths. The fatality-rate for *measles* has declined considerably in recent years, and from the 7445 cases notified in London only 2 deaths resulted.

1. London County Council: Report of the County Medical Officer of Health and Principal School Medical Officer, 1954. Pp. 231. 2s. 6d.

The report includes a detailed account and statistical data relating to recent trends in the mortality and morbidity of *tuberculosis* in London. About a century ago nearly one-fifth of all deaths in Londoners was due to tuberculosis; in 1950 the proportion had fallen to a thirtieth and in 1954 to a fiftieth. 77% of the deaths in 1954 from all forms of tuberculosis occurred among persons aged over 45 years, and the majority (79%) of these deaths were in men.

The routine vaccination by B.C.G. of tuberculin-negative 13-year-old school-children was inaugurated during the year. About 25% of parents withheld their consent to vaccination. Of the children whose parents consented to vaccination, only 15% of those not in contact with a known case of tuberculosis were found to be positive reactors.

There was a slight though welcome improvement in the "immunity state" of London children under 5: the number of primary immunisations against diphtheria increased from 36,004 in 1953 to 47,621 in 1954. At the end of 1954 it was estimated that 55% of children under 5 had at some time been immunised against diphtheria. In spite of the fact that no special publicity was given to whooping-cough immunisation, the demand for it continued to grow and during the past four years it had increased fourfold. The number of children vaccinated against smallpox in their first year of life has almost doubled since 1949, and during 1954 about a half of all children under 1 were vaccinated.

Safeguarding Agricultural Workers

Based on some of the recommendations made in 1949 by the Gowers Committee on health, welfare, and safety in non-industrial employment, the Agriculture (Safety, Health and Welfare Provisions) Bill[1] now before Parliament enables the Agricultural Ministers to make protective regulations.

These may deal, among other things, with the safeguarding of workers from dangerous parts of machines, with the training or supervision of young persons when working with prescribed machines, and with the protection of workers from the risk of falls and strains. The maximum loads which workers may lift under different circumstances may be specified. The Bill also provides for notices to be served requiring the provision of sanitary and washing facilities; and the Ministers may make regulations for the provision of movable sanitary facilities where workers are employed by a contractor or other person who is not the occupier of the land. In addition the Bill provides that children under 13 years of age may be prohibited from riding on or driving prescribed vehicles, machinery, or implements used in agriculture. (Local authorities are at present empowered to make by-laws concerning the conditions in which children, after their 13th birthdays and until they leave school, may assist in any trade or occupation.) All agricultural units are to have a first-aid box whose contents will be laid down by regulations. Regulations may require the notification and keeping of records of accidents and certain diseases connected with agricultural work. The Bill also makes certain rules concerning inquests on deaths which may have been caused by agricultural operations.

Colouring in Food

A supplementary report,[2] presented to the Food Standards Committee by their preservatives sub-committee, on the use of colouring matters in foods was published on Dec. 21. In an earlier report,[3] published in January, 1955, the main recommendation was that the Public Health (Preservatives, &c., in Food) Regulations, 1925–1953, should be amended so as to permit the use in foods of specified colours only. The present position under these regulations is that, with a few specified exceptions, the addition of colouring matters to articles of food is permitted. The supplementary report reviews the representations which the subcommittee have received from trade and other interests. It sets out in greater detail than in the earlier report the subcommittee's views on the declaration of the presence in foods of added colour; and it recommends a slightly modified list of permitted colours. In other respects it reaffirms the earlier recommendations.

In the list of permitted colours, the report recommends the inclusion of two additional colours of natural origin, titanium dioxide and ultramarine; and there seems, it says, no objection to the continued use in foods of the other organic colours of natural origin customarily used in foods. In view of the need for certain coal-tar colours, a revised list of synthetic colours recommended for inclusion in the permitted list is given in an appendix.

The earlier report recommended that in general the presence in foods of added colour should be declared to the purchaser; but it was recognised that exceptions might be necessary. In the supplementary report recommendations are made as to the form the declaration should take, the sales in respect of which declaration should apply, and the foods which need not be required to bear a declaration of added colour.

Before deciding, in consultation with other Ministers concerned, what action should be taken on its recommendations, the Minister of Agriculture, Fisheries and Food will consider any further representations from interested parties.

Representations already made to the subcommittee need not be repeated, but new representations should be sent to the Assistant Secretary, Food Standards and Hygiene Division, Ministry of Agriculture, Fisheries and Food, Great Westminster House, Horseferry Road, London, S.W.1, to arrive not later than Jan. 31.

1. Agriculture (Safety, Health and Welfare Provisions) Act, 1955. H.M. Stationery Office, 1955. Pp. 14. 1s.
2. Food Standards Committee: Supplementary Report on Colouring Matters. H.M. Stationery Office. Pp. 15. 9d.
3. See *Lancet*, 1955, i, 146.

Medicine and the Law

Right to Case-records

To whom do case-records belong—to the patient or to the doctor or hospital authority? The point arose recently when a woman was charged before a Metropolitan magistrate with stealing documents, said to be her own case-papers, from St. Mary's Hospital, Paddington.[1]

The prosecution solicitor said that the defendant came for treatment at the hospital and took the papers from a table in an office while a doctor was being called. She took them home, and they were found there by the police. The hospital authorities, said the solicitor, were in an embarrassing position because the papers covered a long and difficult case in which civil proceedings had been threatened on several occasions. They wanted to establish that a patient had no right to confidential papers of this character.

For the defence, it was submitted that a hospital patient had the same right to his or her papers as a solicitor's client; the removal of the papers could not be larceny. The defendant had thought that she needed them in order to get treatment and because she wanted the information they contained.

The magistrate said that no-one was going to hold in that court that a patient had a right to his or her records. Prima facie the documents must be the property of the hospital; until the matter was disposed of they should be handed back to the hospital, leaving the accused to take such action as she would be advised to secure possession of them. The magistrate suggested that the prosecution should withdraw the charge and he would direct that the papers should be returned to the hospital to be kept in safe custody until the ownership was decided by legal proceedings. This course was adopted.

The position as between solicitor and client is stated thus in Halsbury's *Laws of England*[2]: "Documents coming into existence in the course of business transacted under a retainer, and either prepared for the benefit of the client or received by the solicitor as agent for the client, belong to the client; but documents prepared by the solicitor for his own protection or benefit, and letters written by the client to the solicitor, belong to the solicitor."

1. *Times*, Dec. 14, 1955. *West London Observer*, Dec. 16, 1955.
2. 2nd ed., vol. 31, p. 102.

In England Now

A Running Commentary by Peripatetic Correspondents

Bridge is an Easy Game is the title of the book which Iain Macleod published in 1952. Its theme is the ACOL system, which makes bidding easy for your partner and difficult for your opponent. Many doctors are good bridge-players and the best doctors make conditions easy for their partners; give disease, which is the opponent, as difficult a chance as possible; use finesse where necessary, and respect conventions. The best bridge-players reach their slams by agreeing on the suit, showing their strength with the minimum of bids, and then using cue-bidding or some convention like the 4–5 no trump or Blackwood convention. Having arrived at the right contract bad or indifferent play can undo all the good of the bidding and lead to a post mortem, which may be tedious but may help the player not to repeat his error.

The best physician suspects a particular organ is at fault, or an infection is at work, investigates it appropriately and not with the full fury of every conceivable test and perhaps calls in his surgical partner for help. If, by careful team-work, they decide that a person has an adenoma of the bronchus, or of the islets of Langerhans or a meningioma of the cord, or perhaps, with the help of the bacteriologist, decide that the patient has typhoid or psittacosis, their satisfaction is as great as the slam-bidder's. But operation or treatment must be as precise as the play of the cards and the experienced operator or physician has yet to complete his task. If operation fails, the post mortem may be revealing. If the physician fails in his diagnosis, the patient may seek other advice and the second physician make the right diagnosis. His chagrin is like that of the bridge-player who bid five hearts over four spades to save game or rubber and goes three down vulnerable, 800 points, only to find later four spades could easily be defeated. Bridge may be an easy game for the real experts and medicine may also be easy at times, but let us never forget that basic principles have an overriding importance over investigations and that administration is an integral part of the profession's work. And let us be thankful that for three years at the top of the administration we have had a player bold enough to study new methods, use finesse, and realise that the doctor-patient relation calls for real partnership. In his new task his recent experience should help and so let us sincerely wish him the best of luck.

* * *

Christmas week has been most confusing. Sunday was recognisable—just: church followed by over-eating; but then chaos set in. Deutero-Sunday coincided with crypto-Monday, and was followed by pseudo-Monday. Some found Wednesday normal, while others confused it with iso-Monday. On retro-Saturday sporadic cases of acute inversion of sleep rhythm heralded an explosive epidemic which raged throughout proto-Sunday and had died out again by midday on Sunday. Monday of the New Year saw the normal calendar comfortably restored.

* * *

On Christmas Eve there was a knock at the door and I heard a boy's clear voice asking permission to sing a carol. I brought him into the lounge and said I would accompany his songs on the piano. He was a genuine Christmas-card chorister with a skin of strawberry and milk and an expression of indestructible innocence. He started with *Sleep Holy Babe* and sang with a clear reedy voice that would have brought tears to the angels. Then he sang *Once in Royal David's City*, and finally the *Coventry Carol*. I would have kept him singing all night, but knowing that he had only a little time in which to amass a fortune I asked my wife to bring in the mince-pies. I poured him out a sweet sherry and searched in my pocket for half a crown. I had to exercise some restraint not to give him five shillings. After he had downed the pies and sherry he bent down and patted my golden Labrador on the head.

"Hallo Su," he said.

"How do you know my dog?"

"I know him quite well. He chased me out of your . . ."

"Don't tell me you are the wretched and degenerate youth who stole every apple from my *only* apple tree!"

The truth was too clear. I turned helplessly to my wife. "I have brought this shining youth into my house out of the cold of the night. I have treated him like a princeling. I have given him my finest vintage sherry and stuffed his pockets with silver . . . only to learn that he is a monster of iniquity!"

The boy's head sank in an agony of remorse. Slowly he opened his hand and offered me the half-crown back. "No, my holy innocent—but before you go you will sing every verse of *The Lord at First had Adam made*—unaccompanied."

* * *

This week looks like marking the end of an epoch in our village. They are going to fill up the hole in the road. It has been there since three years last Christmas, something to do with one of those new-fangled sewage schemes that so disrupt the English way of life. The steam-roller came clattering down the hill last Monday and is belching impatiently behind the vicarage. Six barrels of tar and a load of granite chippings lie waiting on the village green—the green which has borne three cricket seasons and two and a half football seasons of the contractors' lunch-hour sport. We feel just as the Britons did when the legions were packing up for Rome. A tampon of tarmacadam will be a miserable placebo for the gap in our hearts.

How different it was when the first lorry-load of men came to the village in 1952 and picked a spot outside the *Rose and Crown*. It was thirsty work and only the landlord was pleased. But Irish tongues and twinkling eyes, and the jingle of half-crowns on pay-night, softened the chill of the tap-room. The hay season was good the following year, the evenings warm and friendly. By autumn time old George's battered taxi was rarely free of white ribbons and confetti. Unfamiliar names crept into my midder bookings, Murphy and O'Brien, and even Pinzarelli. A fine lot of christening parties we had, with a lot of the real proper peaty stuff for the doctor. Too bad that one or two lucky lads got back across the sea; but we are a broad-minded lot in our village, quite used to our own English game of trial and error; so Mildred and Daphne were worked off on someone else, with a flying start for a dowry.

We shall miss them all in lots of ways. The odd hand scalded while making the nine o'clock tea. The sciatica before the local races. Mike O'Leary was shaping up nicely as a spin-bowler on Saturday afternoons. Pinzarelli clipped the privet hedge around the surgery with the artistry of Michelangelo. Poor simple Alf will soon be out of a job. He used to twiddle the stop-and-go sign on the corner. Nobody took much notice of it, of course, except the day he twiddled it too late and we had to jack the vicar's car out of the hole. Mrs. Ugglethorpe's paraffin sales will slump when the little red lights are snuffed out for the last time. The *Rose and Crown* will seem cheerless.

The hole might well have been there for another three years if the boss's son had not come back from his National Service. He was a gangling pimply youth when he pegged out the claim, and he never really had a decent chance to get to know us before he was whisked away into uniform. Now he has come back, bronzed and broadened, but contact with the wider world seems to have made him strangely intolerant of our hole. Can you wonder that we are heavy-hearted?

* * *

I had called for some hair-oil, and found myself standing behind an anxious mother, I distinctly heard her ask for: "Delinquent pastilles, please." The chemist looked mystified for a moment and then handed her a packet. When she had gone, I could not resist asking him to resolve the mystery. To my relief I found that the medicament required was Gee's linctus pastilles.

* * *

News from the breakfast table

Jane (aged 13): "I am going to paint the dolls' house these holidays and sell it. Then with the money I could buy at least two budgies."

Hugh (aged 9): "Do I get a share?"

Jane: "No!"

Hugh: "I don't think that's fair. After all I helped to bring the dolls up."

Letters to the Editor

RECRUITMENT FOR THE OVERSEA MEDICAL SERVICE

SIR,—There is a certain amount of uneasiness about the future of what until recently was called the Colonial Medical Service. May I inflict on your readers some reflections of an amateur that have a bearing on the problem ? *

The Present Situation

Although the Oversea Medical Service is still fairly healthy there is a shortage of doctors in certain territories ; and in some places, such as Northern Nigeria, it is serious.

Owing to the progress of some dependencies towards home rule, and, ultimately, complete self-government, a career in Colonial medicine (as in other branches of the Colonial Service) is now robbed of some of its former security and of prospects of advancement for the competent man. It is doubtful whether the type of medical officer now being recruited is on the average quite as good as formerly. Not very long ago it was not unusual to find men who, although not perhaps shining lights academically, were energetic, independent, adventurous, and anxious to use their talents in places where they could make their weight felt. These men were the backbone of the service. Some recent recruits are able, but others would have had little chance of success in the United Kingdom in the fiercely competitive conditions that have prevailed since the war and seem likely to continue.

At the same time there is a surplus of good men in the United Kingdom. Some of them, especially those with a little knowledge of the opportunities for work in Colonial territories, would welcome a spell of duty overseas provided—and this is the crucial qualification—that they could be assured of a reasonable prospect of finding suitable employment at home if and when they decided to return.

Indigenous medical services are growing apace, and in a number of territories there are promising medical schools. Thus, so far as the British graduate is concerned, the service is steadily shrinking. It may therefore be asked what need there is to consider a problem that will solve itself within a generation or less. It is, however, clear that for a number of years to come British doctors should continue to help in building up medical services that are still defective and leavening those that have already achieved autonomy or will soon do so. It would be lamentable if the Oversea Medical Service, as we know it, disintegrated in haphazard fashion during the next ten years.

Recent information about resignations in West Africa is disquieting. That the service will contract is certain ; but it is possible to make this an orderly involution rather than a rout. The introduction of the Oversea Service last year in place of the Colonial Service was a welcome step, but one cannot help wondering whether the remedy was too little and too late.

The Proposal

The Oversea Medical Service should be abolished. Each territory would continue to have its medical service which would be recruited locally or by secondment from a new Oversea Division of the National Health Service. In some cases the staff would be entirely autochthonous ; in others the majority would continue for a time to be supplied by the United Kingdom.

The rates of pay in the Oversea Division of the National Health Service would be the same as in the existing health service plus whatever allowances were appropriate. Salaries would be paid by the National Health Service, the necessary funds being derived from contributions from the various territories supplemented as required by an allocation from the Colonial Development and Welfare Fund. The purpose of this allocation would be to ensure that in poor countries the rates of pay for overseas officers would be as good, or almost as good, as those in wealthier territories. Furthermore, it would be desirable to stabilise establishments so that they would no longer be subject to disconcerting fluctuations dependent on factors such as the prevailing price of coffee or sisal. Each territory would indicate to the Colonial Office, and, through it, to the Oversea Division of the National Health Service, what vacancies it wished to be filled from the United Kingdom. If a man chose to make his career in Colonial medicine he could apply for transfer to a local medical service, if he were prepared to take the risk, or for transfer (see below) to the permanent staff of the Oversea Division of the National Health Service.

The Difficulties

These are formidable and the list that follows is far from exhaustive ; but no worth-while administrative change can be made without a good deal of pain and suffering.

If one of the cardinal features of this scheme is that men may come and go between the United Kingdom and the oversea territories, then by far the biggest obstacle is the fact that the National Health Service is not unified so far as the appointment of medical officers is concerned. This important function has been wisely delegated to boards of governors of teaching hospitals and to regional hospital boards. The Ministry of Health as such can make no promise of reappointment to a man who is seconded for service overseas. This is the main reason why the regulations made to facilitate secondment proved unfruitful. The power of appointment is in the hands of the boards, many of which know little about the Colonial Service and care less.

An outstanding man whose pioneer work in a remote colony was fittingly recognised by Government returned to the United Kingdom at the conclusion of his three-year contract. He was well known to his regional board and held in high esteem by his professional colleagues. All were aware of the duration of his term of service overseas. Yet on his return he was kept waiting for about nine months before he found employment, and it is possible that he might have been even worse off if pressure had not been put on the board from outside. This sort of thing is discouraging.

There are two possible solutions. The ideal but difficult one is that boards should agree to accept responsibility for filling vacancies in particular territories. The Hospital for Sick Children (Great Ormond Street) already undertakes to supply a registrar for the pædiatric service at Kampala, Uganda. However, the chances are that a single teaching hospital or regional board would find it impossible to supply the men with the necessary inclinations and qualifications for particular vacancies as they arose ; or, even if the men were found, it might be impossible to guarantee appropriate vacancies for them on their return. Yet this system of adoption, as it might be called, has the merit of evoking personal interest and the pride of relationship. For that reason it may be better than the alternative and ought not, perhaps, to be lightly dismissed.

The alternative is that when the Oversea Division of the National Health Service is asked to supply medical officers for this or that territory it should notify *all* boards of governors and regional boards ; these would submit to the Oversea Division the names of men who wished to

* The policy proposed is in line with that advocated in September, 1953, by a special correspondent to the *Times* and in letters contributed to that newspaper in October, 1955, by Sir Reginald Saloway, Mr. Julian Snow, and Mr. John Tilney.

be considered and for whom places would be available at the end of their term of service overseas. An arrangement of this kind would be utterly valueless unless the boards, already overworked and often harassed, entered enthusiastically into this new and onerous responsibility. They would need to learn something about the Colonies; but it is possible, and even likely, that if the ground were well prepared the boards would respond favourably. And it happens that the Colonial Office can now command the services of a number of medical folk in this country with a good knowledge of Colonial medicine who would be willing to acquaint boards of governors and regional boards with the great significance of the new departure.

Another serious objection to the scheme is that it tends to replace a regular army by one made of men serving on short-term commissions. Many of the hard-won benefits of unification of the service would be lost. Yet it should be possible to maintain a corps-d'élite of men who have decided to devote their lives to Colonial medicine and who could be transferred, as at present, to key posts in any territory as the need arose. Within the Oversea Division there would be an enclave for such men, still paid by the United Kingdom Government, with regular grades of promotion, but with no guarantee (any more than at present) of their being appointed to posts at home on resignation or retirement.

If the course outlined above were limited to medicine—and no more is suggested—it might be objected that the more or less uniform pattern of Colonial administration was being badly shaken. The system described could not indeed be easily applied to other professional services because there is nothing in other professions wholly comparable with the National Health Service. Here is the test of the value of these proposals. If they are worth while, then administrative tidiness should not be taken too seriously. And it may be pointed out that however neat the present pattern of central administration that in the territories themselves becomes increasingly kaleidoscopic, with the introduction of officers recruited locally, the direct appointment by Colonial governments of doctors from foreign countries, and the evolution of health departments responsible to elected ministers. Even the semblance of uniformity is going; the loss of a little more would of itself do no harm.

The Colonial Office would rightly feel reluctant to delegate responsibility for the selection of men for service overseas to another Government department which has little knowledge of Colonial affairs and is, indeed, still busy wrestling with the manifold problems presented by a huge and still young health service. It should not be beyond human wit to devise machinery whereby the Secretary of State for the Colonies continued to exercise ultimate authority. It would be of benefit to the Civil Servants in his department (as well as to those responsible for the National Health Service) if there were some broadening of selection committees. Selection committees set up under the National Health Service, though still not ideal, are wider in composition and to that extent considerably better than in former times. It is perhaps worth mentioning too that university bodies in the oversea territories seem well content to leave much of the selection of men, even for senior posts, to committees appointed by the Inter-University Council and sitting in London.

I have said nothing about a possible relationship between general practice in the United Kingdom and the proposals I have outlined. There are two reasons for this: this letter is already too long, and it would be better for questions concerning the general practice aspect of the N.H.S. to be discussed by someone well versed in the subject.

Institute of Orthopædics,
234, Great Portland Street,
London, W.1. H. J. SEDDON.

CYTOLOGICAL TESTS OF SEX

SIR,—I wish to plead for the utmost in caution and diplomacy in the use of such expressions as "female nuclei or male nuclei" and "genetic female or genetic male" when applying cytological tests of sex clinically. Gonadal agenesis patients are feminine although their cells lack sex chromatin in the majority of cases. Similarly a proportion of male pseudohermaphrodites are feminine, clinically and socially, although their body cells are of the male type. A converse situation is encountered in some true hermaphrodites and in certain uncommon syndromes that are now being studied. A well-informed patient might be more disturbed than the circumstances warrant should he or she learn by a chance remark that the body cells are at variance with the obvious sexual anatomy. Consequently, I would prefer to see used in the clinic such less committal expressions as "chromatin positive or chromatin negative."

The cytological tests of sex have important theoretical implications in the study of sex differentiation. They also have a distinct diagnostic value in practice. However, they should carry no weight beyond this, and I agree with Wilkins et al.[1] who emphasise that the presence or absence of sex chromatin, in congenital errors of sex development, is a minor detail in the femaleness or maleness of the whole person. It would be most regrettable if the advantages that accrue from having available a cytological test of sex were marred by placing an additional psychological burden on any patient who suffers from an abnormality in sex development.

The recent applications of cytological tests of sex in clinical practice emphasise the necessity of fundamental cytological studies to establish what relation there is between the sex chromatin and the sex chromosomes. The suggestion that the "female" sex chromatin is derived from heteropyknotic portions of two X chromosomes is only a plausible hypothesis that is based on indirect evidence.[2] Should this hypothesis prove incorrect the cytological tests would retain their practical usefulness in differential diagnosis, but theoretical derivations might be greatly affected. In particular, it is premature to equate female-type nuclei with genetic femaleness or male-type nuclei with genetic maleness, as a generalisation in errors of sex development, for our present methods give no direct information concerning the genes that are concerned with sex determination and sex differentiation.

Department of Microscopic Anatomy,
University of Western Ontario,
London, Canada. MURRAY L. BARR.

DISORDERS OF CONTEMPORARY SOCIETY

SIR,—Professor Pickering (Dec. 3) refers to one factor which we, as a profession, could do something to control.

It has been emphasised that the tyranny of the kings and princes has been replaced by that of the organised groups. Today antagonisms grow up between groups as they once did between potentates.

In war we are, as it were, thrown into a bag and shaken up together. This gives many opportunities for understanding the other man's point of view and welds us together. But when war ceases the opportunities thus presented are again taken away.

In the field of industrial medicine this is painfully apparent, for those in one occupational group perceive dimly, if at all, their dependence on other groups. Thus the factory workers distrust "the City" and those in the City condemn, all too easily, the factory man. The fact that both are in the same production team is scarcely

1. Wilkins, L., Grumbach, M. M., Van Wyk, J. J., Shepard, T. H., Papadatos, C. *Pediatrics*, 1955, **16**, 287.
2. Barr, M. L. *In* Modern Trends in Obstetrics and Gynæcology. Edited by Kenneth Bowes. Second series. London, 1955; chapter 7, p. 123.

known and the two groups never really meet. Yet agencies exist that could facilitate such meetings by which, surely, mental health would be improved. Is not much sickness in industry of emotional origin and does not a lot stem from the antagonisms between groups?

The politicians seem to know little about the way in which the stresses mentioned arise and are aggravated. By grandiose planning they make things worse and expect, without reason, that an individual can easily attach his loyalty and affection to some immense organisation. Yet all civil and military experience shows how difficult this is. In health services they also make things worse by undue segregation of occupational groups in separate medical services. But we have often, when sick, one of the rare opportunities in a hospital or other institution to make unusual contacts which daily life denies us. At such times we can meet those in different walks of life.

Is it not then a mistaken policy to create special services for special groups, excluding others from these services? Does not this policy help to widen the rifts between one group and another?

I see no reason why those concerned with mental health should not take more positive steps to break down the antagonisms described. They need not talk politics to do this. As specialists in a field which baffles the layman we have a duty to help in this situation and, in doing so, to avoid jargon as Professor Pickering so rightly says.

Standardisation and uniformity, whatever politicians may say, are biologically impossible and the attempt to impose them can only be disastrous. Stimulation comes from diversity and from the same source should come a better understanding of our fellow men. Are we not members one of another?

Hitchin, Herts. G. C. PETHER.

ἐμοῦ θανάντος

EMOU THANANTOS

SIR,—According to the old Greek myth, the rebellious Prometheus stole the secret of fire from Heaven and was punished terribly by the eagle, servant of Zeus; but had to be acknowledged as the greatest benefactor of the human race. Modern men, successors of Prometheus, have discovered the secret of nuclear energy. Will they become destroyers of the world; or, by harnessing nuclear energy, will they become the greatest benefactors of mankind? Julian Huxley[1] likens their possible destructive activity to that of a cancer on the Earth.

This choice for good or evil reminds me of something that I wrote many years ago in a fanciful article on the Teleological Aspect of Cancer.[2] It was an imaginary conversation between two cells of a living human being. One cell was complaining of bad treatment, and said "he was determined to try the effect of undergoing a malignant neoplasic mutation." The other cell, arguing against such a step, said "that by undergoing such a mutation he would be destroying the body on which he lived." The answer was that "although he himself would doubtless be dead, his host would live long enough for the birth of hundreds of insurgent descendants,[3] especially in the metastases, and it would be his great great, great, grandchildren who would suffer, and that one really could not be troubled by what would happen to them." Indeed there is an old Greek saying, quoted in the works of Euripides: "when I am dead (ἐμοῦ θανάντος) let the earth be dissolved in fire." This is what I call the *emou thanantos* way of looking at many an important subject.

Even now, one continually hears people saying "Ah well, I don't want to waste my time thinking about that. I shall be dead long before. What will it really matter to me?" But civilised man should say: "The question *ought* to matter to us—whether the world will be destroyed by gangsters after our life or not." If civilised man does not concern himself with such things, can one expect the less civilised peoples in various parts of the world to bother themselves with such thoughts? And those peoples are rapidly gaining in world power and in numerical importance.

London, N.W.1. F. PARKES WEBER.

1. *News Chronicle*, Dec. 3, 1955.
2. Weber, F. P. *Med. Pr.* 1932, **188**, 271.
3. The malignant neoplasic insurgent cells "Stoop" (that is, become less differentiated and more savage) in order to Conquer.

HYDROCORTISONE IN PAINFUL SHOULDER

SIR,—Dr. Cyriax (Dec. 31) fails to grasp the purport of my letter of Nov. 5: my aim was to point out that cervical spondylitis with nerve-root involvement is often associated with capsulo-arthritis of the shoulder-joint, and may be the fons et origo thereof; in such cases the lowered muscle tone and loss of support, which are demonstrable by electromyography, have resulted in undue strain being put upon the joint structures, which in time they come to resent.

Neither in the article to which he refers, nor in his *Textbook of Orthopædic Medicine*, do I find that Dr. Cyriax specifically refers to this clinical syndrome.

Sunderland. W. GRANT WAUGH.

ECLAMPSIA

SIR,—Dr. Schuurmans (Dec. 17) says that 17 years ago it was suggested that the high incidence of eclampsia in Australia might be due to the large quantity of meat consumed there. Surely Hamlin has disproved this fallacious view?

In Australia by means of a high-protein diet he has caused eclampsia to disappear. On the other hand, as Hamlin has found that limiting the intake of carbohydrate prevents excessive gains of weight, and is followed by the disappearance of severe toxæmia and eclampsia, it is logical to conclude that heavy carbohydrate intake produces the dangerous and excessive gains of weight which are followed by toxæmia and eclampsia.

In any prolonged war eclampsia is apt to diminish or disappear. It happened in Germany in 1914–18. War leads to food shortage and rationing, and so prevents over-eating; reduced intake of food prevents any excessive gain of weight and so is followed by the disappearance of severe toxæmia and eclampsia; this in turn results in fewer toxæmia-produced stillbirths and premature births; and since, as I have shown (Nov. 5), toxæmia and eclampsia affect mothers who are producing boys more often than those who are producing girls, the babies whose lives are saved are more often boys than girls. By this means Nature is able, through producing a surplus of live male babies, to compensate for the male combatants who have died fighting in the war. Post-war male population increases are well known.

The disappearance of eclampsia in Holland during the late war was, I am confident, due, not to the quality of the food, but to its severely reduced quantity. With the end of the war, and an increase in the quantity of food, over-eating became possible and eclampsia reappeared.

The diet which is suggested by Dr. Schuurmans to prevent eclampsia is more likely to produce it, unless bread and potatoes are restricted.

In a region where the disease is fairly common, I have found that for each case of eclampsia there are about 20 cases of toxæmia severe enough to necessitate induction of labour. Using the frequency of this procedure as an index of severe toxæmia, it is possible to note the effect of diet on toxæmia, and indirectly on eclampsia. In the years 1947–51, without controlling weight, the frequency of inductions for toxæmia in my patients was 7·7% (52 out of 674, including 3 cases of eclampsia), while in 1952–55 it was 3·2% (23 out of 710, including 1 case of eclampsia). In the latter period, at first I attempted to control weight only with anorexigenic drugs; but later, owing to the results being inadequate, I also instructed patients to cut their bread and potato intake (i.e., those foods which Dr. Schuurmans is recommending), with improved results. Of the 23 patients who were "failures," 18 had had excessive weight gains (that is to say, my control of their weight was inadequate) while the other 5

patients consisted of 2 primiparæ who were initially hypertensive (essential hypertension) and 3 multiparæ with initial hypertension and histories of having had previous toxæmia (i.e., patients who according to my theory had permanently retained a hostility to invading transplacental hormones). By the correct diet, eclampsia and severe toxæmia can nearly always be reduced in severity to little more than mild toxæmia. "Many cases of mild toxæmia" that still occur probably include a considerable number of "aborted" severe toxæmias or eclampsias.

Dr. Schuurmans doubts my theory that mothers may react to the entry of fœtal hormones because, he says, these do not differ in any respect from those of the mother. But this is not an established fact. Steroid chemistry is complex enough in the adult, but it has never been studied, and could probably never be studied, properly in the fœtus. Apart from the suspicion that the sex hormones of the fœtus are probably produced by the adrenal cortex, instead of by the ovary in the mother, it is quite impossible to prove the truth of Dr. Schuurmans' incautious statement about the hormones of the unborn baby, though it may well be possible to disprove it.

To predetermine the fœtal sex by biochemical means, it is essential for the fœtal sex hormones in the mother to differ from the maternal hormones, and for the presence or influence of the fœtal hormones to be detected. I suggested in my article that it might be possible to predetermine sex before, but not after, the onset of toxæmia, because entry of fœtal hormones into the mother would then be resisted. This suggestion, if confirmed, should dispel Dr. Schuurmans's doubts concerning the possibility of maternal reaction to fœtal hormones.

Reading. K. D. SALZMANN.

EARLY DIAGNOSIS OF COMPRESSION OF THE SPINAL CORD

SIR,—I would like to congratulate Mr. Rowbotham (Dec. 10) on his efforts to encourage early diagnosis of neoplasms causing cord compression, and endorse his views on the disastrous results of late diagnosis. Recently I have seen four such cases.

One of these four patients had a ten-month history and bilateral palsy of the fifth, sixth, seventh, and eighth cervical and first thoracic nerve-roots, but no sensory changes. He had been treated for cervical spondylosis. At operation he had a pachymeningitis.

The next patient had an eight-month history and a bilateral palsy of the fifth, sixth, and seventh cervical nerve-roots, with sensory changes; the plantar responses were flexor. He also had been treated as a case of cervical spondylosis. At operation a benign intramedullary tumour was removed, and he is doing well.

The third patient had a four-month history and a unilateral palsy of the seventh and eighth cervical and first thoracic nerve-roots with sensory changes. There were no radiographic changes in the cervical spine, and there was no evidence of a Pancoast tumour (which may cause this type of palsy); but further radiographic examination showed the seventh cervical vertebra collapsing and by this time a supraclavicular gland was palpable, which biopsy showed to be malignant.

The fourth case was in a young adult who had a seven-month history and a bilateral first sacral palsy, bladder symptoms, and sensory loss from the upper buttocks to the outer side of both feet, including the anal and perineal areas. Operation disclosed a tumour of the cauda equina.

Each of these cases had been diagnosed as a disc lesion.

I would like to add six criteria which help towards early diagnosis of spinal tumours:

1. A history of increasing and intractable segmental pain.
2. Peripheral symptoms, starting distally and progressing proximally, in the upper limb.
3. Sensory changes in more than one dermatome.
4. Rapid increase in the palsy. This is common with disc lesions, but then only one nerve-root is affected. If more than one nerve-root is affected, then a spinal tumour should be suspected.
5. Bilateral sensory or motor changes, especially if more than one segment is affected.
6. The plantar response is unreliable, since the response may not be extensor until late in the course of the disease.

London, W.1. R. BARBOR.

INGUINAL HERNIORRHAPHY

SIR,—Mr. Doran (Dec. 24) argues that, since the conjoined tendon forms the lower border of an inelastic aponeurosis, the "primary fixed point" remains equidistant from the anterior superior iliac spines, and the distance of this point from umbilicus and pubic crest remains fixed, no "shutter action" of the conjoined tendon is possible. While the clinical and experimental evidence adduced seems to support this hypothesis, the geometrical argument appears to be fallacious.

In his fig. 1 Mr. Doran represents the "primary fixed point" as the point of intersection of the diagonals of a quadrilateral whose apices are the umbilicus, the anterior superior iliac spines, and the pubic crest. Were this the case the argument would hold. In fact, however, the geometrical representation of these points is an asymmetrical four-sided pyramid, with the primary fixed point at the apex. Theoretically this figure degenerates into a quadrilateral when all five points are co-planar, and the apex of the pyramid becomes the point of intersection of the diagonals of the quadrilateral. Even if this configuration were present in an individual it would only occur temporarily, since any change in intra-abdominal tension would alter the position of the primary fixed point in the sagittal plane.

Once it is appreciated that the correct representation of these points is a pyramid it may be seen from geometrical considerations that the primary fixed point is only "fixed" in the coronal plane. In the sagittal plane it is able to occupy a wide range of positions without its relations to the other four points in the coronal plane being altered. Normally the primary fixed point lies anteriorly to the three bony points and the umbilicus. On increasing the intra-abdominal pressure, as in coughing, it moves more anteriorly. Bearing in mind that the tissues between the conjoined tendon and the primary fixed point are inelastic, if one accepts Mr. Doran's hypothesis one would expect the conjoined tendon to become further separated from the inguinal ligament. The experiments with radio-opaque markers show that, in fact, the distance between the markers remains fixed.

One is led to the inescapable conclusion that there must be some mechanism which prevents further separation, and that this mechanism can only be the shutter mechanism of the conjoined tendon. I submit therefore that the argument against this action of the conjoined tendon is based on a too-literal interpretation of the word "shutter." The fact that apposition to the inguinal ligament or, indeed, any movement does not take place is not a valid argument against its action in maintaining the integrity of the inguinal canal. Failure of reparative operations based on this principle must be sought elsewhere.

London, W.11. J. F. ROBINSON.

SIR,—Mr. Doran, in his paper which was read to the Anatomical Society, understandably confined himself to anatomical facts.

The value of his observations would be enhanced for surgeons if he would state what incidence of recurrent hernia, if any, was noted among the 12 cases in which the conjoined tendon and Poupart's ligament eventually parted company, and among the 25 cases in which these structures remained in apposition.

The gratifying freedom from recurrence in my experience after operations similar to that performed in Mr. Doran's series suggests that, even if the conjoined tendon and Poupart's ligament separate, they yet remain joined by a sheet of fibrous tissue strong enough to form an adequate posterior wall to the inguinal canal.

When recurrence has followed suture of the conjoined tendon to Poupart's ligament after making a relaxing

incision, this has usually been a direct hernia through the medial end of the posterior wall of the inguinal canal. This has led me to pay particular attention to the placing of the most medial stitch exactly at the attachment of Poupart's ligament to the pubic spine.

This "master stitch" by itself usually brings the conjoined tendon into close approximation with Poupart's ligament and minimises the strain on the more lateral sutures. I use fine nylon for these and a stouter strand for the "master stitch." It would be of interest to know what suture material Mr. Doran used in his cases.

Edgware General Hospital. FRANK FORTY.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

SIR,—Your account [1] of this society's meeting includes an abstract of the paper on Renal Manifestations of Primary Aldosteronism which we presented with Dr. Gordon Farrell. This abstract contains an error.

The patients were studied during hydropenia or 'Pitressin' infusion and osmotic diuresis. In this situation they excreted slightly hypotonic urine. The defect in net water reabsorption, measured as a negative $T^{c}_{H_2O}$, differed from that of diabetes insipidus in that it was not as extensive and was *not corrected* by pitressin. Removal of the tumour resulted in at least partial recovery of the function of urine concentration. The preoperative defect is apparently a manifestation of renal tubular potassium depletion.

The aim of the paper was to indicate that hypertension with excretion of dilute alkaline urine should bring to the clinician's mind the suspicion of aldosteronism, and perhaps lead, from these simple indications, to the uncovering of further cases of this unusual and interesting condition.

Research Division,
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Cleveland 6, Ohio, U.S.A. A. C. CORCORAN
HARRIET P. DUSTAN.

ADRENAL HÆMORRHAGE

SIR,—I was interested by Dr. Galpin's letter (Dec. 17). The association of suprarenal hæmorrhage with an intracranial lesion has recently been commented on by Dr. Buxton Hopkin (Nov. 5). The presentation of his case as an exercise in the diagnosis of the "acute abdomen" prompts me to describe briefly a case I saw clinically and examined post mortem.

A 43-year-old man was admitted to Crumpsall Hospital on Dec. 8, 1952, with left-sided pleural effusion and underlying pulmonary collapse, which was confirmed radiographically. Carcinoma of the bronchus was tentatively diagnosed. The patient had had a chill four months previously, and a month later had complained of pain in the left side of the chest associated with breathlessness, slight cough, and weakness. A week after admission the patient began to have severe constant pain in the epigastrium, penetrating through to the back; he did not vomit. There was guarding but no tenderness, and bowel sounds were absent. His blood-pressure was 140/80 mm. Hg, having been 125/70 on admission. A leaking perforation of a chronic duodenal ulcer was suspected in view of a history of ulcer pain, which had developed ten years previously after a fracture of the spine. A policy of "wait-and-see" was adopted. Pain disappeared, bowel sounds became audible, and diarrhœa developed.

Two days later, on Dec. 17, the patient felt better, but suddenly his pulse-rate rose to 128 per min., and his blood-pressure fell to 80/55; there were no signs of shock. His blood-pressure remained constant at this level, and he complained of weakness. Addison's disease was suggested. On Dec. 30 the serum-sodium level was 240 mg. per 100 ml., and the serum-chloride level 500 mg. per 100 ml. (as NaCl). The patient died quietly on Jan. 4, his blood-pressure never having risen above 80/60.

Necropsy confirmed the presence of a carcinoma of the left main bronchus associated with bronchiectasis of the lung and chronic empyema. The heart showed severe brown atrophy, and there was a chronic ulcer of the first part of the duodenum with no sign of perforation. Both suprarenal glands had become shells of organised hæmorrhage, and it was impossible to say histologically whether there had been thrombosis or embolism. Unlike the case recently reported by Mackenzie [1] no carcinoma was present in these glands.

In many ways, both Dr. Galpin's and my case are similar to the syndrome of "hæmorrhagic suprarenal infarction" reported by Keele and Keele.[2] In their case there was repeated vomiting, severe persistent pain below the right costal margin with tenderness, and a remarkable absence of shock.

I feel that if such a diagnosis is made during life noradrenaline by itself is insufficient, and full substitution therapy, and possibly chlorpromazine, are all worth giving; for otherwise the condition must be hopeless.

Pathology Laboratory,
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Manchester. M. LEVENE.

ROSEOLA INFANTUM

SIR,—In your issue of Dec. 3 Dr. Letchner writes: "Roseola infantum is a common infective disease, occurring nearly exclusively in the first 3 years of life; ... Complications are very rare; ..." I have observed in adults a very similar condition with occasional severe complications.

In August and September, 1941, at No. 12 General Hospital, Sarafand, Palestine, some fifty cases of what I termed (for want of a better name) "infectious roseola" occurred among the medical and nursing staff and patients. Similar small outbreaks were noted in the surrounding district.

Usually the onset was abrupt with frontal headache, pain on eye movement (a prominent feature in some cases), backache, general muscular pains, and occasionally joint pains. The fever was short-lived and usually slight. Three days was the usual duration, and 101°F the average highest temperature, though 104°F was recorded. Anorexia and nausea, with coated tongue, were fairly common; and occasionally weakness of the legs, slight sore throat, and hyperalgesia of the skin occurred.

The *rash* appeared on the 3rd to 8th day, but most commonly on the 4th or 5th day. It lasted 5 to 7 days, and was of two types: (1) a papulo-erythematous, dusky, pink, discrete, morbilliform eruption, resembling measles, but not so blotchy, leading to no desquamation or subsequent staining; (2) less commonly, a much sparser and more discrete, pink, papular eruption. The distribution of the two types was similar, affecting the following parts (in order of situation and density): (*a*) back, chest, upper arms; (*b*) forearms, abdomen, thighs, face and neck, legs; (*c*) hands and feet, palms, soft palate. The eruption usually appeared a day or so after the temperature had become normal and was not accompanied by a secondary rise of fever. There were no successive crops.

The *glandular enlargement* appeared with the rash, though it was not seen in every case, and consisted of a generalised slight lymph-gland enlargement without tenderness. The epitrochlear glands were fairly commonly enlarged. There was no splenic enlargement.

The *blood picture*, in those cases that were examined, most usually included leucopenia (about 3000 white cells per c.mm.) with a relative lymphocytosis of 50%, in the first few days of the illness. The great majority of cases cleared up completely and rapidly without sequelæ, although sometimes debility, anorexia, and nausea persisted for 10–14 days.

The only serious complication was *encephalitis* and three cases of this, with a fourth possible one, were observed. They were characterised by fever, headache, neck stiffness, positive Kernig's sign, mental change, and tremor, with no gross abnormalities in the cerebrospinal fluid (C.S.F.). The fourth patient had fever, headache, and some mental confusion with no physical signs, and the C.S.F. was not examined. All recovered completely.

I had the impression that *atypical cases* also occurred—e.g., glandular enlargement without rash, a kind of prodromal

1. *Lancet*, 1955, ii, 1120.

1. Mackenzie, D. H. *J. Path. Bact.* 1955, **69**, 333.
2. Keele, D. V., Keele, K. D. *Brit. med. J.* 1942, ii, 687.

mottling without development of a true rash, or general symptoms without either rash or enlarged glands.

The *Weil-Felix and Paul-Bunnell reactions* were negative in all cases tested.

From two cases in Tel Aviv, in which the practitioner concerned could obtain comparatively precise dates as to time of contact and removal therefrom, the *incubation period* appeared to be 4–5 days.

Milian [1] under the heading Roseole Infectieuse, refers briefly to a somewhat similar condition which had previously been noted by Trousseau (roséole saisonnière), and Fournier (roséole simple), but I have not been able to examine the latter articles.

I could arrive at no conclusion as to cause or method of spread, but arthropod vectors were most unlikely and the occurrence of encephalitis suggested that the condition might be due to a virus infection.

Folkestone. F. R. FLETCHER.

CANCER OF THE FEMALE BREAST

SIR,—The point made by Dr. Holtzer (Dec. 24) is important, and perhaps I should have explained fully how the rates were adjusted rather than make the bald statement "the five-year survival-rates have been corrected for age."

The denominator used to calculate the corrected survival-rate for any age-group is not the total number of women that fall within that age-group but the number expected to be alive at the end of the five-year period, under the normal conditions of mortality. Thus the 65–69 age-group contained 1250 women of whom 367 were alive five years later, but according to the current life table 1035 should have been alive.

The crude five-year survival is of course $\frac{367}{1250}$ or 29·4%, but when corrected for age it is $\frac{367}{1035}$ or 35·4%.

General Register Office, London, W.C.2. A. MCKENZIE.

NOR ANY DROP TO DRINK?

SIR,—Your article under this heading (Dec. 17) covers almost all aspects of Civil Defence in the thermonuclear age. I should like here to put forward only three points:

(1) The Ministry of Housing and Local Government have had for some time arrangements for "mutual aid" for water undertakings, though as far as I am aware no full survey of potential water-supplies has been made—at least not in this area.

(2) On the question of the contamination of water-supplies by fission products I think that perhaps we (and you) may be too pessimistic, as the Atomic Energy Research Establishment have been into this already and have taken samples in various places to determine basic levels. One supply in this area (from an underground working from which pitchblende was obtained many years ago) was found to have a degree of radioactivity vastly higher than any other place in this country; yet the inhabitants are just as healthy as those near by who do not drink the same water. There is also a place in Sweden where the water has a radioactivity 100 times greater even than that just mentioned, but there is no information that the people living there are not healthy.

For reservoirs, owing to the relatively short half-life of some at least of the most dangerous fission products, storage would help; while, where there are filters, using an alum floc and the actual physical scraping of the sand surface would remove more. It is highly unlikely that there would be any electricity for a number of days; so pumps for water and sewage would not be working unless Diesel-operated.

In such circumstances it is obvious it would be criminal to waste a drop, and this should be impressed on the Fire Service, which under present arrangements seems to imagine that unlimited quantities of water will be available to put out fires. The answer is of course that houses would have to be dynamited for fire breaks and the rest left to burn.

1. Milian, G. Nouvelle pratique dermatologique. Paris, 1936; vol. 2, p. 803.

(3) The teaching of "field hygiene," especially to sanitary inspectors, was recommended by the medical officers of health course at the Civil Defence Staff College as long ago as May, 1951. But no action has been taken by the appropriate departments.

With regard to (1) and (2) I would refer you also to the contamination of the Wabash River after the historic "Trinity" test, and also to a paper by Tsuzuki.[1]

Penzance. W. K. DUNSCOMBE.

NEEDLE BIOPSY OF THE KIDNEY

SIR,—We were delighted with the conservative attitude of your editorial of Dec. 10. My colleagues and I have done over 400 renal biopsies in the past few years. No patient has died as a result of the procedure; the morbidity has been slight; and in no patient was surgical exploration necessary. None the less, we believe that, for the time being at least, the procedure should be done in special centres and only by those who have been trained in this technique.

We were interested in several points raised by you:

> You state that "several patients have already had as many as four successive biopsies, giving detailed information of progressive renal disease which could not have been obtained by other means. This is not, however, an adequate justification for a potentially dangerous operation; and biopsy should be used only when the information it gives will be of direct advantage to the patient, and not merely a rather academic addition to medical knowledge."

This is a most important statement, for it emphasises again that the clinical investigator must be first a clinician, whose chief consideration is the care of the patient.[2] As we have shown, in selected cases, serial biopsy of the kidney has provided data which could not have been obtained in any other way and which was of great value in the care and management of our patients and their illnesses. The serially taken biopsies have incidentally provided new knowledge of the natural history of diseases which, as John Ryle taught us many years ago on the wards of Guy's Hospital,[3] is not "merely a rather academic addition to medical knowledge."

> Later you state "that in patients with the nephrotic syndrome . . . therapeutic trial [of cortisone or corticotrophin] would give the same information [as renal biopsy] with less disturbance to the patient."

Unfortunately this is not true. Without histological information the response to cortisone or corticotrophin is always unpredictable; this is hardly surprising if we recognise that "nephrotic syndrome" is but a syndrome with many underlying pathological causes. When the nephrotic patient is first seen the clinician is faced with the problems of how to treat him, for how long, and whether to treat a second time. This decision can be made with far more confidence if the underlying pathology is known. In our experience, no good has been achieved in patients with severe glomerular lesions who have been treated with corticotrophin or steroid hormones. And in some cases at least it is our opinion that their clinical condition has deteriorated greatly as a result of treatment with these hormones. As far as "disturbance to the patient" is concerned, our patients who have needed a bone-marrow or hepatic biopsy as well as a renal biopsy have told us they have been least disturbed by the latter procedure. It has also come as a surprise to us to find that a number of our female patients were disturbed less by renal biopsy than by catheterisation of their bladders.

You end by saying: "There are other interesting possibilities, but it seems unlikely that renal biopsy will achieve the importance that liver biopsy is now assuming. Many

1. Tsuzuki, M. *Münch. med. Wschr.* Aug. 5, 1955, 97.
2. Peabody, F. W. Doctor and Patient: Papers on the Relationship of the Physician to Men and Institutions. New York, 1930.
3. Ryle, J. A. The Natural History of Disease. London, 1948.

lives have been saved by liver biopsy in the differential diagnosis of prolonged jaundice; but accurate differential diagnosis of renal disease is rarely of such immediate and crucial importance."

We wonder whether this prognostication is based on personal and comparative experience in the use of needle biopsy in the care of patients suffering from either hepatic or renal disease.

Our experience with hepatic biopsies goes back many years and is much more extensive than with renal biopsy. To tell the truth, we are embarrassed to admit that we have saved lives with hepatic biopsies, but even this early in the game we will admit having cured some patients with renal disease as a result of biopsy of the kidney. On the basis of our experience with both types of biopsies we suspect that biopsy of the kidney will be of greater potential value to patients with diseases involving the kidney than hepatic biopsy is to those with jaundice and other types of hepatic disorder. As a matter of fact, we find less use today for hepatic biopsies than we did a few years ago. This is to be expected because, from hepatic biopsies, we have learned so much of the natural history of the different diseases which produce cirrhosis or result in jaundice that we are now able to recognise them early and *clinically*.

It is probable that few needle biopsies of the kidney will be necessary twenty years hence, for by that time clinical investigators will have sorted out, by renal biopsy, the early and *treatable* stages of the many diseases which produce the end-stage kidney. At present these are lumped together by physicians under the all-inclusive "chronic glomerulonephritis"—the diagnosis of which is equivalent to a death sentence.

Presbyterian Hospital,
Chicago 12, Ill., U.S.A. ROBERT M. KARK.

THE FORGOTTEN PATIENT

SIR,—The letter (Dec. 24) from the president and secretary, Friends of Menston Hospital, states that the findings of a *Daily Express* investigation "cannot be dismissed so airily as Dr. Duncan (Nov. 12) would have us think." I can ignore the rebuke from Mr. Carter and Mr. Cripps, but not their inaccuracy. My protest of Nov. 12 neither included nor implied reference to any newspaper investigation or articles.

Severalls Hospital,
Colchester, Essex. A. G. DUNCAN.

CERVICAL VERTIGO

SIR,—I was interested in last week's article by Dr. Ryan and Dr. Cope.

They describe five cases of vertigo associated with cervical abnormalities and attribute the vertigo in each case to interference with the tonic neck reflexes. In describing each case they state that the aural findings were negative. What does this mean? If every ear tested was clinically normal and gave normal audiometric and caloric results, they should state this. If audiometry and caloric testing were not done their observations on the ætiology of the vertigo are valueless.

Evidence is accumulating rapidly that labyrinthine vertigo is linked closely with the autonomic nerve-supply to the vessels supplying the inner ear. It would appear that interference with the cervical sympathetic chain might well have caused the vertigo in all five cases by causing a temporary alteration in the blood-supply to one or both inner ears.

The conception of "cervical vertigo" put forward by Dr. Ryan and Dr. Cope merely increases the present confusion on this subject, and in laying stress on the cervical abnormalities present may tend to prevent proper otological investigation of these cases in future.

Tyrone County Hospital,
Omagh. T. J. WILMOT.

STREPTOKINASE IN TREATMENT OF INFLAMMATION

SIR,—Professor Dubos, in his account of the Micro-environment of Inflammation,[1] has reviewed a new field to which he himself has made many significant contributions.

The œdema fluid in inflamed areas contains large amounts of fibrin. The deposition of fibrin in the tissue-fluids and the formation of thrombi in the arteries, capillaries, veins, and lymphatics help to wall-off the area of infection by aiding in the formation of a limiting membrane. This defence curtain has been correctly regarded as a beneficial structure; and its preservation, in order to inhibit the spread of infection, has been considered a basic surgical necessity.

The advent of streptokinase has produced a change in thought about the barrier. The chemical nature of the limiting membrane might be changed by administration of streptokinase; for this will indirectly cause lysis of fibrin through activation of plasminogen to plasmin, which is the active lytic agent. Such a change would be beneficial, since the antibacterial drugs, being borne by the blood, cannot pass through the limiting membrane from without any more than can pathogenic bacteria from within. The inefficiency of the antibacterial drugs in the treatment of abscesses, walled-off cellulitis, and similar infections is well recognised.

'Varidase,' which contains streptokinase and streptodornase, has been used as the source of streptokinase, since a pure preparation of streptokinase has not yet been made.[2] (The streptodornase content can here be disregarded.) Varidase was dissolved in physiological saline so that the final concentration of streptokinase was 10,000 units per ml. The solution must be stored in a refrigerator; and a fresh solution was made daily. 5000 units of streptokinase in 0·5 ml. of physiological saline was injected intramuscularly, usually in the gluteal area, twice daily for a total of six doses or more if necessary. One of the antibacterial drugs must be given, either orally or parenterally, when streptokinase is injected intramuscularly in the treatment of infection and/or œdema. A spreading infection may result from dissolution of the membrane if protection against the contained bacteria is not provided.

In 64 patients with abscess, cellulitis, empyema, epididymitis, hæmarthrosis, thrombosed hæmorrhoids, orchitis secondary to mumps, sinusitis, thrombophlebitis and œdema, 45 excellent and 15 good results were obtained. The 4 poor results were in a patient with paraplegia and extensive decubitus ulcers which were resistant to all forms of treatment, in 2 patients with peripheral arteriosclerotic vascular disease with gangrene, and in a patient with thrombosed hæmorrhoids who did not receive sufficient treatment.

Of patients who were benefited the redness and œdema started to decrease in a few after several hours, and in all receded considerably by the end of two days. In the patients with granulating wounds, healing was hastened by reduction of the surrounding induration. Delay in healing was not seen in any of the patients. Pain and tenderness at the site of injection, noted in about 60% of the patients, disappeared about twenty-four to forty-eight hours after the injections were stopped. The pain and tenderness were probably due to the streptokinase in varidase, since they were not encountered in patients given streptodornase alone. A granuloma at the site of injection was not seen in any of the patients. A rise in temperature attributable to the streptokinase was noted in about 10% of the patients. A significant change in the total and differential white-blood-cell counts and in the prothrombin-time was not found; fibrinolysis, determined by the whole-blood technique, was not observed; hæmorrhage, hæmatomas, and petechiæ were not seen; and chills, cyanosis, or allergic responses were not noted. Administration of anti-histamine drugs was not necessary.

1. Dubos, R. J. *Lancet*, 1955, ii, 1.
2. Miller, J. M., Surmonte, J. A., Ginsberg, M., Ablondi, F. A. *Maryland St. med. J.* 1955, **4**, 188.

To obtain good results from the intramuscular injection of streptokinase in the treatment of infection and œdema, the involved area must have an adequate circulation. Because of the risk of hæmorrhage, streptokinase should not be given to patients with defects of the blood-clotting mechanism.

Veterans Administration Hospital,
Fort Howard, Maryland, U.S.A. JOSEPH M. MILLER.

LIGNOCAINE

SIR,—Since lignocaine was introduced some six years ago there have been sporadic reports of toxic reactions, the latest being that by Mr. Dutton in last week's issue.

Recently, Lock and Greiss [1] have recorded a case of convulsions and death following the administration of 40 ml. of 2% lignocaine ('Xylocaine') for pudendal block, which they regard as "a gross overdosage." Nevertheless, because of its many advantages over procaine, lignocaine is the agent of choice in obstetrical local anæsthesia, and it would be a pity if the occasional adverse report should deter obstetricians from employing this excellent drug.

Having used lignocaine in many hundreds of cases over the past five years, I have sometimes noticed marked drowsiness during or soon after delivery, and at first welcomed this effect for its associated amnesia. However, since observing an attack (fortunately transient) of pallor, twitching, and cyanosis after the injection of 60 ml. of 1% lignocaine I have tended to use only the 0·5% solution, and like Mr. Dutton I find 50 ml. quite ample for pudendal block and perineal infiltration. I should like to endorse Mr. Dutton's plea for care in the use of this valuable agent, and for administration of the smallest effective amount in the lowest concentration possible.

Pinner, Middlesex. J. P. O'DWYER.

BLOOD-TRANSFUSION

SIR,—In your leading article last week you state: "Hospitals that have no resident clinical pathologist should not undertake work in which transfusion is often needed." This suggestion is quite impracticable. It is difficult enough, if not impossible, to maintain resident medical and surgical posts at their correct level in many non-teaching hospitals, let alone find resident clinical pathologists in the numbers which would be required.

Blood-grouping and cross-matching is a purely scientific technique which can be learned by any person with sufficient intelligence whether he has been trained in the art of medicine or not. The classification of a case as a dangerous recipient depends almost entirely on information given by the clinicians on the request form. A pathologist with duties at more than one hospital cannot possibly supervise individual tests, whether routine or emergency, and in practice the vast bulk of this work is done entirely by technicians. Furthermore, experience shows that in reading difficult or doubtful agglutinations the opinion of the technician of a few years' experience is greatly superior to that of a doctor who has only been doing the job for a few months; indeed, such an opinion is frequently better than that of the pathologist-in-charge who sees only occasional tests at irregular intervals.

This is one aspect of the problem of the best use of man-power. It must be pointed out that if technicians are not attracted to the hospitals because the salary-scales do not compare sufficiently favourably with those obtainable in other scientific appointments, the blood-transfusion service will be among the first to be the most seriously affected.

Department of Pathology,
Kingston General Hospital,
Hull. A. J. SHILLITOE.

1. Lock, F. R., Greiss, F. C. *Amer. J. Obstet. Gynec.* 1955, **70**, 861.

PULMONARY EMBOLISM

SIR,—In your leading article last week you cite the view that it is the first embolism that kills, and that the patient who survives has little to fear from later ones. I am not clear whether this is intended to refer to postoperative cases only, of which it may be true; it is certainly sadly at variance with experience in medical, as opposed to surgical, practice. I have recently reported,[1] in a different connection, three cases in which the warning emboli were misinterpreted as disease of heart or lungs, until a final one enabled the true sequence of events to be established by the pathologist at necropsy. These are by no means unique, and an awareness of the possibility of premonitory non-fatal embolism would, I am sure, save many lives. It would be unfortunate if your words diminished our alertness in this respect.

Although prophylactic division of veins may be, as you say, unjustified, the operation is, in my experience, the only effective therapeutic measure in those cases of recurrent pulmonary embolism from the legs that occur from time to time.

London, W.1. P. PETCH.

PROTOPHRENIA

SIR,—In his attempt to demonstrate the rôle of emotional injury in the production of mental defect Dr. Bourne (Dec. 3) summarises observations on 154 severely defective children under 6 years of age who had been admitted to the Fountain Hospital during the previous two years. It is surprising, however, to note that, whereas 138 of these children had an organic defect, only 16 belonged to the "residual" group classified by Tredgold as having the "simple variety of primary amentia," which in outpatients outweighs the organic defect. For this unusually high proportion of "organic" cases there seem to be two reasons. The first is that few parents of a normal-looking child below school age who can walk and can control his sphincter, will agree to have him certified as a mental defective and sent to an institution. The second is that, with the existing shortage of institutional beds, normal-looking children without gross motor disability will not gain admission to hospital unless they show "socially intolerable" behaviour. These two circumstances may explain why (1) almost all Dr. Bourne's "residual" cases have feckless or otherwise unsuitable parents, and (2) these few "residual" cases show all "socially intolerable" behaviour disorders.

Few would doubt that adverse environment tends to aggravate the clinical picture of mental defect by adding psychotic features to those of intellectual retardation. They would even agree with Dr. Bourne that psychotic traits of this kind are observed more often in children with normal appearances; for if a mentally defective child appears normal he is liable (and even more so) in the "good" home, to educational pressure, confronting him with incomprehensible and insoluble requests which would never be addressed to a defective-looking child. It is to this educational pressure, in its manifold forms, that the handicapped child responds with growing withdrawal, sometimes terminating in complete autism.

As Dr. Creak (Dec. 17) and Dr. Dutton (Dec. 17) indicate, however, cases of the "residual" kind may, after all, have organic disease; and I would go further and say that in fact *clinical* signs and symptoms of such disease can usually be found in them. During the ten years I have worked on mental defect I have found such signs and symptoms in almost all the many hundreds of young imbecile children whom I have examined and observed. They are to be found both in those presenting obvious symptoms of organic disease and in those presenting none. Apart from disturbances in simple

1. Petch, C. P. In the press.

reflex patterns—such as deficient oculomotor response on visual stimulation, loss or weakness of the pupillary light reflex, inability of convergence, and absent startle reflex on sudden loud sounds—one finds a considerable number of functional disorders which, if they were seen in adults, every neurologist would regard as infallible symptoms of localised brain impairment. I have elsewhere described in detail four different syndromes, which I have found singly or in combination in all children with intelligence quotients between 30 and 50,[1] and in most children in the moron range.[2] These disabilities (visuo-somatic, auditory-somatic, visuo-autonomic, and auditory-autonomic) probably originate in disintegration of exteroceptor (visual, auditory) impulses and either proprioceptor or interoceptor impulses. Such disintegration may result from metabolic errors as well as from structural lesions, affecting visual or auditory pathways anywhere in their course. If the pathological process is confined to these perceptual pathways, and if it is not severe enough to cause total central blindness or deafness, the neurological syndromes may be overlooked and the child may be said to have no organic disease. If mentally handicapped children were examined with the same precision as adults with suspected organic brain disease, I am sure that the organic basis of severe mental (i.e., cognitive) defect could no longer be doubted. Only the recognition and diagnosis of the *special* organic nature of a child's mental handicap will give us the understanding and the insight necessary for devising special medico-educational methods to compensate for the weakened or lacking perceptual modalities.

St. Lawrence's Hospital,
Caterham, Surrey. LISE GELLNER.

THYROID CANCER AFTER RADIOTHERAPY

SIR,—In the excellent annotation in your issue of Dec. 17 you remark that a survey of the relationship between X-ray treatment in infancy and the development of thyroid cancer seems to be called for.

I recently agreed to join with Dr. Theodore Winship, of Washington, and Mr. Frank Rundle, of Sydney, in carrying out such a survey; and I would be very grateful if particulars of any cases of thyroid cancer in children under fifteen years of age could be sent to me at New End Hospital, London, N.W.3.

London, W.1. RAYMOND GREENE.

X RAYS FROM TELEVISION SETS

SIR,—In view of research work now going forward and of our knowledge of the effects of radiation upon tissues, it seems appropriate to raise the question of whether the great increase of television-viewing in the public generally does not bear some relation to the rather startling increase in the incidence of leukæmia and lung carcinoma. Every television set contains a cathode-ray tube and every such tube emits radiation when "on." I know of no investigation which has been undertaken on the effects on tissues of whatever radiations such tubes emit, but I see no reason to suppose they differ from those emitted by an X-ray cathode tube. Very small quantities of radiation over a long period are, I believe, carcinogenic. If there is the slightest possibility that the emanations from the average television tube are carcinogenic, then the matter calls for the most immediate and complete investigation.

London, N.W.3. N. CHISHOLM.

*** We understand that Dr. Chisholm's important question can be answered reassuringly—for television-viewers at any rate. The television sets at present in general use are of low voltage, and the manufacturers see to it that the tube is screened in such a way that no significant quantity of radiation escapes. But technicians and others who regularly handle sets with the screening removed may be repeatedly exposed to low-energy X rays, and the risk they run in this way deserves close attention.—ED. L.

1. Gellner, L. *Biology*, 1951, **16**, 130, and unpublished papers.
2. Gellner, L. *Spec. Sch. J.* 1955, **44**, 12.

FIRST-AID TREATMENT OF THE UNCONSCIOUS PATIENT

SIR,—Recently some first-aid textbooks have been criticised for their recommended treatment of insensibility, and the neurosurgeons have very kindly advised as to improvement in this treatment. The St. John Ambulance Association has accepted their ruling and has issued to its members a supplement to their textbook *First Aid to the Injured* giving the revised treatment.

The essential point made is the great danger of pneumonia due to the inhalation of secretions, blood, or vomit into the respiratory passages, and the treatment now includes the following rules:

1. If breathing is obstructed in any way by blood, secretions, or vomited matter, lay the patient on his side in the three-quarters-prone position (half-way between side and face-down position) and ensure that the throat and lungs are free from obstruction.

2. Support the patient in this position with a pad in front of the chest. If no pad is available draw up the patient's upper knee.

3. If there is still any tendency to choke, the patient should be placed in the full prone position with the head lower than the feet and turned to one side.

4. Keep a continuous and careful watch on the patient.

St. John Ambulance Association,
10, Grosvenor Crescent,
London, S.W.1. A. C. WHITE KNOX
Principal medical officer.

STAFFING LABORATORIES

SIR,—I am glad that other pathologists beside me are concerned at the proposed new gradings in laboratories. After two years' bitter labour the Whitley Council has delivered itself of a ridiculous mouse.

I think that it was in 1946 that laboratory technicians last had a reasonable salary award. There have since been minor adjustments, but I doubt whether the salaries of senior technicians especially have kept pace with their responsibilities and standards.

If the new gradings are to be forced upon us, we, as pathologists, will have to bear the opprobrium of their imposition on individuals. Although our advice in this matter appears to have been ignored the technicians who will suffer will blame us. The great danger is that the new gradings would tend to produce in time a kind of second-class senior technician who works in a second-class laboratory. In my opinion this idea cannot be too strongly condemned. It would certainly not benefit either patients or staff.

May I make an earnest plea to the Whitley Council to think again and to try and achieve a more generally acceptable result?

Group Pathological Laboratory,
Lakin Road, Warwick. A. P. PRIOR.

SIR,—Dr. Taylor (Dec. 24) is rightly concerned about the difficulty of staffing laboratories in the smaller hospitals, but he is on debatable ground when he says without qualification: "Remuneration in the higher grades of technology should depend on individual merit." All will agree that it is proper that the most meritorious candidate should be appointed to a vacant post, but merit awards to holders of posts have not been such a success in hospital medical staffing that we should lightly approve an extension of the principle to laboratory staffs.

The only equitable method of rewarding specific senior posts is to grade them according to the technical standard necessary for the work to be carried out

efficiently; and this must depend on the technical skill called for by the work involved, and also the amount of responsibility entailed in the supervision of other technologists and the training of students and juniors—in short the "rate for the job," arrived at after consideration of all aspects of the case by persons, including the pathologist-in-charge, whose experience qualifies them to express an informed opinion.

When this had been done, a state would develop in which the more able men would be stimulated to apply for the higher-grade senior-technologist posts and would be at an advantage as candidates for such posts by reason of their superior experience and ability, while the less outstanding men would be absorbed into the less responsible posts, and would not have to compete for these against candidates of outstanding merit, who might be tempted to apply if the remuneration depended on the successful candidate's individual merit rather than on the nature of the work.

Regional Transfusion Centre,
Brooklands Avenue,
Cambridge. C. B. V. WALKER.

CHILDREN IN HOSPITAL

SIR,—It was pleasant to read the account by Professor Illingworth and Dr. Holt (Dec. 17) of the kind and sensible régime at the Sheffield Children's Hospital.

Their description of the all too common outbursts of rage and grief in child patients, following a visit by a parent, will be familiar to all who have worked in a children's ward. These emotional cataclysms tend to be so harrowing in the case of younger children that, on this score alone, it might be difficult to persuade an observer who was unversed in the subtleties of child psychology that the encouragement of frequent visiting was anything more than an act of faith.

The ultimate value of frequent visiting cannot be assessed simply by observing children and parents during a period of inpatient care. I would urge Professor Illingworth and his colleagues to extend their valuable work to include the study of a child's behaviour before and after his hospital stay. A controlled series could be obtained from the study of children who have the misfortune to be admitted to those few remaining hospitals where visiting is restricted or forbidden. In surveys of this nature one cannot help believing that the assistance of a children's psychologist and psychiatrist would materially help the pædiatricians. However well developed the sense of responsibility may be in the latter, without a psychological training it is difficult to describe, let alone interpret, any child's behaviour.

Department of Psychological Medicine,
University of Durham,
Queen Victoria Road,
Newcastle upon Tyne 1. JOSEPH NEVILLE.

HORDER MEMORIAL TRUST

SIR,—By the death of Lord Horder—who would have been 85 this month—the medical profession and the public have lost a very great doctor. His former house-physicians at St. Barthomomew's Hospital believe that there are many of his colleagues and former pupils, patients and friends, and those interested in the many activities to which he gave his support, who would like to contribute to a fitting memorial.

With this object in view, his former house-physicians are asking for funds to inaugurate the Horder Memorial Trust, which has the approval of his family and the support of the Royal College of Physicians and of the Treasurer and Governors of the former voluntary hospital of St. Bartholomew with which Lord Horder was so long associated. The College and Governors have agreed to act jointly as trustees.

It is proposed to found a travelling fellowship or professorship in clinical medicine—the science of healing at the bedside—for members of the medical profession, and if money permits to endow a lectureship in this subject at St. Bartholomew's Hospital. Throughout his long life, both as practitioner and teacher, Lord Horder always emphasised that a doctor's most important work is done at the bedside of his sick patient; and it is felt that a Trust of this nature will best serve to keep his memory alive, and will be of lasting benefit to the profession and therefore to the public also.

Cheques, &c., should be made payable to the Horder Memorial Trust and sent to Sir George Aylwen, Bt., c/o St. Bartholomew's Hospital, London, E.C.1.

G. AYLWEN
W. RUSSELL BRAIN
GEOFFREY BOURNE
EDWARD CULLINAN
E. M. DARMADY.

London.

Appointments

BRINKLEY, DIANA M., M.B. Lond., D.M.R.T.: whole-time asst. radiotherapist, Addenbrooke's Hospital, Cambridge.
MANWELL, WILLIAM, M.B. Belf., D.T.M.: asst. M.O., Flintshire.
O'DWYER, J. P., M.B. N.U.I., M.R.C.O.G.: obstetrician and gynæcologist, U.S.A.F. Hospital, South Ruislip, Middx.
ROHAN, T. M. B., M.B. Belf.: asst. M.O.H. and school M.O., Rotherham.

The Hospital for Sick Children, Great Ormond Street, London.

AIREY, D. M., M.B. N.Z., D.C.H.: M.O., Tadworth Court.
BARRIE, HERBERT, M.D. Lond.: asst. medical registrar.
COTHAY, DELIA M. H. H., M.B. Lond.: house-surgeon.
COTTOM, D. G., M.C., B.M. Oxfd, M.R.C.P.: asst. medical registrar.
DONOVAN, D. E., M.D. Dubl., D.C.H.: house-physician.
KENNEDY, W. P., M.D., D.C.H.: house-physician.
PERKIN, HYMAN, M.B. Cape Town: house-surgeon.
SHANKS, JEAN M., B.M. Oxfd: registrar, department of clinical pathology.

East Anglian Regional Hospital Board:

BATTY SHAW, ANTHONY, D.M. Oxfd, M.R.C.P.: consultant physician, Norfolk and Norwich Hospital group.
BLUNDELL, J. A., M.B. Lond., D.A.: senior anæsthetic registrar, Peterborough Memorial Hospital.
FIELDUS, P. L., M.B. Lond.: medical registrar, Newmarket General Hospital.
INMAN, G. K. E., M.B. Sheff., D.M.R.D.: consultant radiologist, Peterborough and Stamford area.
KABRAJI, D. K., M.S. Bombay: surgical registrar, North Cambridgeshire Hospital.
PARGITER, R. A., M.B. Lond.: senior registrar in psychiatry, Suffolk mental hospitals.
SHELDON, C. S., M.B. Lond.: registrar in psychiatry, Fulbourn and Addenbrooke's Hospitals.
SOCHOCKY, SERHJ, M.D. Lwow, M.R.C.S.: surgical registrar, Papworth Hospital.
THACKER, C. K. M., M.B. Lond., D.T.M. & H.: medical registrar, Papworth Hospital.

Birmingham Regional Hospital Board:

CORBITT, F. H., M.R.C.S.: whole-time asst. psychiatrist, Stallington Hall Hospital, Stoke-on-Trent.
ELKES, O. C., M.B. Lond.: whole-time asst. psychiatrist, All Saints' Hospital, Winson Green, Birmingham.
FLEWETT, T. H., M.D. Belf.: whole-time consultant pathologist, Birmingham (Selly Oak) group.
MACLAY, D. T., M.D. Glasg., D.P.M.: whole-time consultant in child psychiatry, Herefordshire and West Bromwich child-guidance clinics, All Saints' Hospital, Winson Green, Birmingham.
ROBERTS, HENRY, M.D. Lpool, M.R.C.O.G.: part-time consultant in obstetrics and gynæcology, West Bromwich group.
WYNFORD-JONES, H., M.R.C.S.: whole-time senior casualty officer, Birmingham (Selly Oak) group.

Manchester Regional Hospital Board:

BEGG, W. G. A., M.B. Glasg., D.P.M.: deputy medical superintendent and asst. psychiatrist (S.H.M.O.), Springfield Hospital, Manchester.
DAVIDSON, S. W., M.B. Edin., F.R.C.S.E.: consultant traumatic and orthopædic surgeon, Macclesfield and district hospitals.

Colonial Appointments:

BALDACCI, L., M.D. Bologna: M.O., Gold Coast.
COOKSON, G. A. H., M.B. Dubl.: M.O., Kenya.
DUTAL, G. M., M.D.: M.O., Northern Region, Nigeria.
EDMONDS, C. M. D., M.B.: resident M.O., Kenya.
FENWICK, K. W. H., M.B. Durh.: M.O., Kenya.
GALEA, J., M.D. Malta: M.O., Somaliland Protectorate.
GARLAND, A. P., M.B. Lond.: M.O., Tanganyika.
GRACEY, T. L., M.B. Belf., D.P.H.: asst. bacteriologist, medical department, Jamaica.
LAWRENCE, E. P., M.B. Camb.: M.O., Uganda.
LOTHE, F., M.B. Sheff.: pathologist, medical department, Uganda.
SMITH, C. J. C., M.B. Edin., F.R.C.S.E.: M.O., Tanganyika.
STANSFIELD, D., M.B. Lond.: M.O., Sierra Leone.
TEWFIK, G. I., M.B. Lond., D.P.M.: specialist alienist, Uganda.
WILLIAMS, MARGARET S. I., M.B. Lond.: resident M.O., Uganda

Obituary

RENÉ LERICHE

M.D., Hon. F.R.C.S., Hon. F.R.C.S.E.

Professor Leriche died at his Mediterranean villa at Cassis on Dec. 29.

Born in 1879, he received his education at the University of Lyons; and throughout his long life Lyons and its medical school retained the first place in his loyalties. In his early years his surgical interests were wide. His Thesis in 1906 was on resection of the stomach for carcinoma, and in 1909 he published with Poncet two volumes on surgical tuberculosis. During his service with the army in the war of 1914–18 he became interested in fractures, and wrote discerningly on their treatment. During this period also he began that study of vascular conditions which was to be the absorbing interest of his life. After the war he practised in Lyons until 1924, when he was appointed professor of clinical surgery in the University of Strasbourg.

[Blanc & Demilly, Lyons

His inaugural lecture at Strasbourg set the pattern for all his many and important contributions to the literature of surgery. He had watched uneasily a tendency to overestimate the value of operative techniques, and in this address on "Physiological Surgery" he elaborated his own view that a patient must be studied as a whole, with the particular object of restoring function to diseased parts. In formulating this approach—at the time somewhat unorthodox—he had been influenced by the writings of Claude Bernard, and to the end of his life this influence was to permeate and pervade his practice, and his papers and books.

During the fourteen years Leriche was in charge of Clinique Chirurgicale "A" in Strasbourg, he had always a number of pupils drawn from all over the world, many of whom now occupy important academic positions in their own countries. It was a period of active and productive research, chiefly upon problems relating to the circulation, conducted both in his wards and in the experimental laboratory.

Leriche was wholly disinterested in putting at the disposal of his staff both his vast clinical material and the profusion of ideas for research born in his fertile brain. To his great natural resources of mind he added intellectual liberalism and receptiveness, the latter fed by frequent visits to surgical centres in Europe and the Americas. He rapidly became a national figure, receiving all the honours his professional colleagues in France could bestow upon him; and also an international figure in his own right and in virtue of the dissemination by his disciples of his views and practice.

In 1937 he accepted the position of Professeur au Collège de France. Although this is the premier chair in France, it has the great disadvantage that the professor is not provided with clinical facilities in any teaching hospital in Paris; for the remainder of his active years Leriche's clinical work was private, and was done in his consulting-rooms and in the American Hospital at Neuilly. Each year the professor must deliver and publish a course of lectures. Leriche's first volume was the well-known "Surgery of Pain," a physiological essay in the Hunterian tradition. In his next book he returned to an earlier interest, the physiology and pathology of bone. The war interrupted these courses. After it, his lectures dealt with vascular problems; and, steadfast in his conviction regarding the correct approach to surgery, the title of each volume began with the words "Physiologie Pathologique . . ." Each volume until the last: in *La Philosophie de la Chirurgie* (1951) he reaffirmed his original concept of surgical practice, and recorded critically the modifications his own opinions had undergone in the light of his experiences in Strasbourg and Paris. He was now an elder statesman. France had rewarded him by electing him to the Institute in the Academy of Sciences; he was the moving spirit (and a past president) of the International Society of Surgery; and he travelled widely both to lecture on surgical topics and to give advice on academic matters. Two years ago he had an illness which curtailed many of these activities.

In the operating-theatre Leriche was deft without ever striving for the spectacular, always on the watch for some immediate problem in hominal physiology: a friend described him as a peripatetic "why?" He was a superb expositor, clear and logical; it has been said that one did not require to know a word of French to follow what he was saying. At the council table his disinterestedness and sincerity often rescued a discursive discussion—even an argument—from foundering, in a short speech in which he would unerringly go to the root of the matter at issue. His interests in life were catholic. He was a voracious reader and his apartment in Paris was full of objects of art, often the work of his grateful patients.

Leriche was a good friend to this country and to its surgeons, who were always assured of a warm welcome. He was an honorary fellow of the Royal College of Surgeons of England, of the Royal College of Surgeons of Edinburgh, and of the Royal Society of Medicine. And in 1939 he was awarded the Lister medal, one of the most prized of his many distinctions.

This memoir would be incomplete without some mention of the part played in his life by his wife, who watched over him with the most loving care, conserved—so far as was in her power—his exuberant energy, and delighted to share with him a gracious hospitality. To her, as was inevitable, he dedicated his "Philosophy of Surgery."

A great leader, and one hard to replace, has passed from the world of surgery. A suitable epitaph perhaps would be: "L'homme est toujours plus grand que le chirurgien."

S. A. writes:

I am glad he died at Cassis which he loved. He had a house there among the rocks and pines of this small and sunny harbour. Here he grew his own vines, and he was proud to offer his own wine to favoured friends in Paris.

A characteristic picture of him would be at one of his clinics before 8 o'clock in the morning. He would arrive at high speed in a small motor-car, quite often on the wrong side of the road, or looking backwards and talking to a passenger. He would bounce out of his car, and be half-way up the corridor, with his assistants running behind trying to catch what he was saying. He was small and round, gay and lively. He had very bright intelligent eyes which twinkled over the tops of his half-rimmed glasses. He wore a plain grey suit and spotted bow tie, and was surprised that people in London

knew he was French although he wore a suit of English worsted. He was always interested in everything, full of ideas and energy. In teaching he preferred to answer questions by posing others and getting one to supply one's own answer, often with much teasing. He was a very eloquent lecturer, both in French and in English, but had in recent years refused to speak English after hearing himself speak on a recording a friend had made of one of his lectures in London.

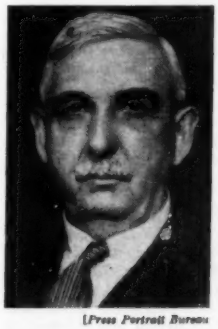
He never failed to stress the importance of honesty, and clarity, in writing notes, or research, and he liked statements to be put down plainly. He thought diagrams and graphs were over-emphasised, and "appeal to the eye, not the intellect." By his precept he encouraged an inquiring attitude of mind. It was a great privilege to have worked for a man who, by his work, his writings, and his personality, revealed himself as truly great.

MALCOLM WATSON

Kt., M.D., LL.D. Glasg., Hon. F.R.F.P.S., D.P.H.

Sir Malcolm Watson, who died at the age of 82 on Dec. 28, was one of the outstanding characters of tropical hygiene during the past half-century. He had been a pioneer in the control of malaria and for long was pre-eminent in its practice.

He was already mature when he went to the Malayan Medical Service in 1901, being aged 27, having the M.B. Glasg. and D.P.H., and having travelled as a ship's surgeon. Ten years later his name was known throughout the world. He found Malaya in a very critical condition: on the one hand there was the promise of flowing prosperity from the wide expansion of the rubber industry, and on the other the threat of ruin from the devastating malaria epidemics which decimated labour forces and might well have brought the expansion to an end. The transmission of malaria by mosquitoes had recently been demonstrated by Ross, but there was no practical experience of its control. Watson set out at once to gain that experience and he set out with an ingenuity which has ever since remained unrivalled. Almost alone he did not allow the ætiological discovery of Ross to blind him to the great fund of epidemiological knowledge which preceded it. He saw malaria as occurring in certain types of surroundings whether of forest, brackish waters, clear streams, or other characteristics, the influence of which was explicable in terms of Ross's discovery though the surroundings remained the fundamental cause. He developed techniques for modifying the surroundings or alternatively of recognising their danger and moving villages to safer areas. He acquired no mean knowledge of civil engineering, working out mechanisms of tide control and a variety of forms of drainage. By this breadth of outlook and combination of knowledge he whisked malaria away from place after place, turning literal death-traps into healthy sites. The new Port Swettenham, on which work had been abandoned and which he sanitated by tidal control, was one of his earliest triumphs, to be repeated in different forms in many other places. The peril which had threatened Malaya's prosperity was removed and that country became an outstanding example to the world, up to the time of the Japanese occupation, by the application of Malcolm Watson's principles. This precedence over others was no mere temporary phase, for Malaya remained consistently twenty years ahead in this respect.



[Press Portrait Bureau

He left government service and settled into private and consultant practice in Malaya in 1907, being called in to advise on many developments of industrial, municipal, and general natures, including the sanitation of Singapore in 1911 and the Perak River Hydro-electric Scheme—the success of which gave him particular pleasure. His success was generally acclaimed: he received the gold medal of the Rubber Growers' Association in 1911, he was knighted and elected LL.D. of Glasgow University in 1924, received the Stewart prize of the British Medical Association in 1927, the William Jones gold medal of the Asiatic Society of Bengal in 1928, the Mary Kingsley medal of the Liverpool School of Tropical Medicine in 1934, and the Albert medal of the Royal Society of Arts in 1939.

In 1928 he left Malaya to become director of the malaria department of the Ross Institute, under the director-in-chief, Sir Ronald Ross, whom he succeeded in 1933, remaining in the post until his retirement in 1942. In these posts he set out to extend to other parts of the world the principles he had developed in Malaya; his first attempts were in Ceylon and India where he established a branch of the institute, the work of which showed that the principles were transferable though the techniques needed to be modified to local conditions. His great interest lay in Africa and particularly in the Rhodesias, where a malaria-free settlement was built up in the Copper Belt under his advice, and he visited and advised in many other places in Africa, Europe, and the Americas. He was a great believer in the benefits which industrial development could bring to the tropics and set himself to further them by advising industry on health matters and training its employees.

Despite his success there was always controversy about Watson: he did not conform to the patterns or practise many of the techniques which seemed to be dictated by the new scientific age, but again and again he achieved brilliant success where others could not. Controversy raged round the question "Why?" The answer lay in his combination of a general epidemiological approach with the narrower entomological approach which most people followed. He had a great sense of fun; he enjoyed every minute of his work; he enjoyed his triumphs, his controversies, and even his failures because they always taught him something which would bring success another time. He had in fact a very full life.

He was married twice: in 1900 to Jean Alice Gray who died in 1935, by whom he had three sons, and in 1938 to Constance Evelyn Loring by whom he had one daughter.

G. M.

HENRY PRATT NEWSHOLME

M.A, D.M. Oxfd, B.Sc. Lond., F.R.C.P.

FOR fifty years and more, the name of Newsholme has held an honoured place in the public-health service. To the family tradition which his uncle Sir Arthur Newsholme began to establish in the '90s, Henry Newsholme, as medical officer of health and professor of public health in Birmingham, steadily added his own individual contribution.

He was the son of the Rev. B. Pratt Newsholme, of Secunderabad, India, and he was educated at Brighton Grammar School and Balliol College, Oxford. As a student he had a brilliant career, and in 1907 he took a first-class in the natural science school at Oxford and graduated B.SC. Lond with first-class honours. He continued his medical studies at St. Thomas's Hospital, qualifying in 1910. After holding house-appointments there he was in 1911 appointed an assistant school medical officer under the London County Council. Later he held appointments at Brighton and Southend-on-Sea, and under the Surrey County Council. During the 1914–18 war he served with the R.A.M.C. in France and Italy. In 1915 he took his M.D.

After the war he was appointed M.O.H. for the North Riding of Yorkshire, and in 1923 for Croydon. In 1927 he succeeded Sir John Robertson at Birmingham and in the same year he was elected F.R.C.P.

At Birmingham Newsholme continued with outstanding success the development of the public-health services which Robertson had so soundly established. Perhaps the most notable achievement of his years of office was the collaboration, without fusion, of the public-health and school medical services which had grown up separately. His factual annual reports, each written as an essay in the best English style, won wide recognition. He was able to record a state of health in which the city could justly take pride. For years, despite unfavourable local circumstances, the infant-mortality rate, for instance, was below that for England and Wales. But Newsholme also made important

contributions to the theory of public health. He read widely, as his bookshelves even in his office showed. In his own writings his religious and philosophical outlook was applied to his professional preoccupations and in 1929 he published *Health, Disease and Integration*, in 1933 *Evolution and Redemption*, in 1937 *Christian Ethics and Social Science*, and in 1951 *Matter, Man and Miracle*.

In 1939 he and his wife were received into the Roman Catholic Church. Of this important side of his life G. A. writes: "Newsholme had been brought up in a religious household and his life was guided by his own firm faith and an essential spirituality which showed itself in a cheerful readiness to help others in times of trouble, sorrow, or crisis."

Another colleague who spent the troubled war years with him at Birmingham, recalls how he insisted on sharing to the full the war-time dangers and responsibilities of the health department.

"For five years he shared equally with two junior medical members of his staff the exacting Civil Defence duties at central control. This meant sleeping at the Council House each night for one week out of three.

"He had a great deal of human understanding and was at all times courteous and kind. But he was excessively shy and retiring by nature and I had the impression that, because of this, he was not always completely at ease in his position as head of a large and important public-health department. There was nothing of the 'showman' about him and he preferred to travel third class rather than first, and to walk or go by public transport rather than in a corporation chauffeur-driven car."

From 1937 to 1941 Newsholme also held the chair of hygiene and public health. He retired from his civic appointment five years ago, and he died on Dec. 21 at the age of 70. His widow survives him with five children.

OCTAVIA MARGARET SOPHIA LEWIN

M.B. Lond.

Dr. Octavia Lewin, who died in London on Dec. 27, graduated in medicine some sixty years ago. She leaves a long record of independent but practical work. Within the profession she will be chiefly remembered for her views on nasal hygiene and correct breathing. As a member of convocation of London University, a school manager of the London County Council, and a governor of Bedford College, she also did much for education.

She was born at Ware, the daughter of Spencer Robert Lewin, and was brought up in Wimpole Street. She was educated at Queen's College, London, Girton College, Cambridge, and the Royal Free Hospital. After qualifying in 1896 she held house-appointments there. Her interest in diseases of the ear, nose, and throat led her to take a clinical assistantship at the Central London Throat and Ear Hospital. Later she was appointed rhinologist to the London County Council.

During the 1914–18 war she worked in French hospitals and later as aural surgeon at the Endell Street Military Hospital. When she gave up her work with the London County Council she continued to teach her methods of nasal hygiene and breathing exercises at the Westminster Health Centre, to which she was medical adviser. She also wrote many articles and letters to the press describing her methods. She was a member of the British Homœopathic Society and in 1945 she was elected a member of the Faculty of Homœopathy.

L. N. writes:

Octavia Lewin was a member of a large family who were left motherless when she was three years of age. She early learned to be independent and fearless, and she retained these characteristics all her life. When working as throat and ear specialist for the L.C.C. she was convinced that lessons in breathing correctly should be given before tonsil and adenoid operation instead of after, as then practised. She sacrificed a lucrative appointment rather than give up her pioneering method, which she taught at free clinics connected with the Westminster Health Society. She insisted on only air being allowed into the nasal passages and deprecated all douching and syringing with liquids. She taught people how to sneeze correctly, so that the expiratory blast blew away the excess mucus secreted in catarrh of nasal passages. This was followed by voluntary blowing with mouth shut and head well down. "Shut your mouth and save your life" was one of her repeated admonitions. She invented all sorts of methods to train children to keep their mouth shut instead of being what she called "gapers."

Her many other interests kept her always young in mind and she was a storehouse of all sorts of original ideas in the home. Her unfailing kindness and love for children was always practical. She was a rare character and beloved by many.

Mr. L. V. CARGILL

Prof. Arnold Sorsby writes:

"Lionel Vernon Cargill was associated with the Royal Eye Hospital for some fifty-five years. In the early years he brought to it a keen and searching mind and superb technical knowledge and skill. In the later years he was the elder statesman, guiding the hospital through a difficult period, increasing its bed complement from some 50 to 130, and initiating the research chair in ophthalmology at the hospital and the Royal College of Surgeons. In all these activities he was the upright man of clear and decisive action.

"His long life extended over the Victorian and Edwardian periods, and the turbulent years of two world wars. Professionally he saw the transformation of ophthalmology from a minor branch of general surgery into an independent and significant specialty, and in this transformation he played his part, as is shown by his early publications and his services as ophthalmic surgeon to several general hospitals. His work for the Society of Apothecaries and at King's College School, Wimbledon, were as valued and as disinterested as his more strictly professional activities."

Prof. T. B. DAVIE

Two of Dr. Davie's South African colleagues write:

"His enthusiasm, energy, determination, and courage had made him a leading figure in academic affairs in South Africa. He was one of those exceptional men who really enjoyed committee work. The reasons were obvious to all who served with him: his clarity of vision allowed him to crystallise for others the most complex administrative problems, and from his insight flowed solutions which gave him satisfaction, and which were invaluable to the university. In the South African Council for Scientific and Industrial Research he served as a member of the council and as chairman of its medical and dental research committee. It is not insignificant that during his term of office there was a steady increase in the output of medical research sponsored by the C.S.I.R. As member of the National Council for Social Research he was able to play his part in the development of research in fields other than that of science. Since the recent establishment of the university advisory committee to the Minister of Education, Arts, and Science, Dr. Davie had served on it as representative of the committee of university principals, and for this important position the South African universities could have chosen no better delegate. He was also a trustee of the Max Sonnenberg University Trust, the Abe Bailey Trust, and the Isaac Ochberg Education Fund, and he was member of the governing councils of several public institutions and of many scholarship committees. Through all this work and through his public statements he soon became known as a man who fought fearlessly for the principles he considered right. Foremost among these he ranked the principles of academic freedom of universities, a freedom which he considered fundamental in a civilised world.

"Despite his eminence he remained approachable by all. He was always ready to listen to their problems and to give his guidance to members of his staff or to students. In addition to his many official duties he found time for innumerable public engagements. He was keenly interested in South Africa and its affairs, its history, its people, its flora and fauna. Even his stamp collection had a South African bias.

"Throughout his busy life he never forgot that he was a doctor. His medical school and medical research benefited greatly from his counsel, and he retained an interest in the affairs of the medical profession, being a strong advocate of the College of Physicians and Surgeons now being established in South Africa. It was often said that he did the work of three men. This is hardly an overstatement; yet for years he had been afflicted with arthritis which but for his indomitable spirit would have been incapacitating. In part this achievement was due to the help he received from his wife. The gap he leaves will be difficult to fill, but the example he set will remain vivid and living for many years to come."

S. B., who was one of his students, writes:

"Clarity, enthusiasm, and a robust humour were Davie's characteristics as a teacher. He was the best I have known; and one of the best men. It is easy for a teacher to display his knowledge and wit at the expense of a student; but though I saw Davie have a hundred opportunities of this kind, I never saw him take one. Himself seemingly an extrovert, he seemed to have an intuitive knowledge of the minds and souls of others—springing perhaps from his most endearing quality, an ebullient and childlike innocence. He gave us his knowledge and he made us laugh with him. I once made a ludicrous, but unfortunate, mistake in a pathology viva. For a moment my fate seemed to hang in the balance. The external examiner looked grave. Then Professor Davie threw back his head and burst into enormous laughter; and brushing the mistake aside, the three of us went happily on. He knew and I knew that I was not going to let him down again.

"After the war I had occasion to ask his help in a small personal matter. I did not think he would remember one out of the thousands of students he had known; and was he not, in any case, head of the University of Cape Town? But he did remember me, and he did help me, though then an ill man, grappling with issues a thousand times more important than my small business. Like many teachers, he inspired respect in his students; but much more he inspired affection. The keynote of his life was youth: he looked young, he thought young, and it was to the young that he devoted most of his days. I am sure that many will remember all their lives this noble man, whose death has saddened as much as his life rejoiced us."

Diary of the Week

JAN. 8 TO 14

Tuesday, 10th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Dr. R. T. Brain: Clinical Vagaries of the Herpes Virus. (Watson Smith lecture.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
3.45 P.M. Dr. Leslie Foulds: Experimental and Histological Studies of the Responsiveness of Mammary Tumours to Hormones. (Imperial Cancer Research Fund lecture.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8 P.M. *Psychiatry.* Prof. L. S. Penrose, F.R.S.: Prospects of Genetical Research in Mental Illness. Dr. J. Fraser Roberts: Preliminary Results of two Surveys on Mental Deficiency.

INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. Dr. R. G. Cochrane: Hansen's Disease.

CHELSEA CLINICAL SOCIETY
8.30 P.M. (Rembrandt Hotel, Thurloe Place, S.W.7.) Dr. A. A. Mason: Theory and Practice of Hypnosis.

MANCHESTER MEDICAL SOCIETY
5 P.M. (Medical School, University.) *Surgery.* Mr. R. R. Simpson: Shakespeare and Surgery.

Wednesday, 11th

ROYAL SOCIETY OF MEDICINE
4.30 P.M. *Physical Medicine.* Dr. W. A. Fell, Squadron-Leader C. V. Wynn Parry, Dr. W. D. Fletcher: Injuries in Sport.

INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Sir Russell Brock: Surgery of Septal Defects.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. H. Haber: Specific and Foreign Body Granulomas.

MIDLAND MEDICAL SOCIETY
8.15 P.M. (154, Great Charles Street, Birmingham, 3.) Dr. A. B. Hegarty: Depressive States.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY, 64, St. James's Street
8.30 P.M. Mr. F. W. Law: Exophthalmic Ophthalmoplegia.

MANCHESTER MEDICAL SOCIETY
4.30 P.M. *Medicine.* Dr. Richard Schilling: Byssinosis in Lancashire Cotton-workers.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, 242, St. Vincent Street, Glasgow, C.2
5 P.M. Prof. Thomas Symington: Some Endocrine Aspects in Relation to Modern Surgery.

Thursday, 12th

ROYAL COLLEGE OF PHYSICIANS OF LONDON
5 P.M. Sir Geoffrey Todd: Chemotherapeutic Control in the Treatment of Fibro-nodular Pulmonary Tuberculosis. (Marc Daniels lecture.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND
5 P.M. Dr. E. R. Williams: The Skull at Birth. (Hunterian lecture.)

ALFRED ADLER MEDICAL SOCIETY
8 P.M. (11, Chandos Street, W.1.) Dr. D. J. West: Homosexuality and Social Psychiatry.

Friday, 13th

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
3.30 P.M. Mr. G. H. Howells: Sinusitis—Acute and Chronic.

INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. Cochrane: Hansen's Disease.

Notes and News

SHORTAGE OF MENTAL NURSES

ADDRESSING a meeting in Shrewsbury last month, Dr. M. J. Brookes drew attention to the acute shortage of nurses in Shelton Hospital, of which he is the medical superintendent. This hospital, built 112 years ago to accommodate 176 patients, has been expanded, and its present statutory accommodation is for approximately 750 patients. Nevertheless, over 1000 patients are in residence. There are only 67 full-time nurses and 48 part-time nurses—i.e., the equivalent of about 91 full-time nursing staff—whereas the ideal establishment would be 270. This means, in practice, that 3–4 nurses look after 50–60 patients, whereas the ideal figure would be 1 nurse to every 4. Dr. Brookes appealed particularly for local help, though he would also be glad to have nurses from other parts of the country. Recruitment, however, was unfortunately limited to the local district because of inadequate residential accommodation for nurses.

The *Shrewsbury Chronicle* of Dec. 9, in reporting this appeal, draws its readers' attention to the fact that the Ministry of Labour and National Service allows young men deferment from National Service if they are willing to start training as nurses before they are 18½. Under this arrangement, made in 1947, men who have completed their training are given an opportunity to work as nurses during their period of National Service.

DISCUSSION GROUPS AND SMALL CONFERENCES

THE World Federation for Mental Health and the Josiah Macy, jun., Foundation, of New York, are the joint sponsors of a small international working conference on the Functioning of Discussion Groups and Small Conferences, which is to be held in Eastbourne from Jan. 31 to Feb. 6. Varying methods of group discussion are increasingly employed at meetings; but, as they are not always as productive as they might be, it has been suggested that a useful manual might be produced as a result of the working conference. Dr. Brock Chisholm, who is a member of the executive board of the federation, is to be in the chair at the conference.

HOSPITAL NEW YEAR

MANY administrators and doctors will face 1956 with more confidence because they have on an accessible shelf the current edition of the *Hospitals Year Book*.[1] In it they will once more find in orderly array particulars of all hospitals and hospital authorities in Great Britain and Northern Ireland, the blood-transfusion services, Government departments, and statutory bodies. The useful indexes to statutory instruments and official circulars have been brought up to date. In his annual review Mr. J. F. Milne, the editor, discusses the inadequacy of the proposed capital expenditure on hospitals, the problems of our mental hospitals, and the shortage of staff at all levels in all kinds of hospitals. He believes that despite these difficulties the quality of the service offered to the patient has improved, "especially in endeavouring to see that he is treated as a person and not simply as a case."

University of Cambridge

The following degrees were recently conferred:

M.D.—I. M. P. Dawson, Errington Ellis, J. R. Ellis, R. M. Forrester, C. S. McKendrick, * F. N. Macnamara, Adolf Polak, Iris Watkins, * D. N. White.

M.B.—H. W. Kirkpatrick.

B.Chir.—Joyce F. Baron, R. W. Beard, R. B. Bennet, M. S. Bethell, A. E. Boyo, R. M. Buckle, N. L. Burrell, D. S. Carmichael, S. B. Carter, R. A. Catterall, J. D. Charters, J. H. Clark, M. N. Cox, J. F. Crewdson, M. W. L. Davis, J. H. Eckersley, P. H. Evans, A. G. Fraser, C. G. Geary, Mary R. Glyn-John, I. P. Grant-Whyte, Rosemary C. Hayball, P. J. E. Hubbard, C. N. Hudson, Rachel E. Hudson, M. H. Heycock, Frank Heyes, J. D. Jenkins, Donald King-Price, J. H. L. Lloyd-Thomas, J. F. Marsden, J. J. Mather, W. O. Mavor, D. L. Miller, J. D. McCaldin, A. S. MacKenzie, D. J. Moorhouse, A. M. Morgan, N. H. Moynihan, J. F. M. Newman, K. E. A. Norbury, R. E. Nottidge, B. W. G. Orr, M. A. Pallister, E. H. O. Parry, Katrina M. Parry, H. W. Parry-Williams, Helen J. Pegg, B. S. Phillips, N. B. Pride, M. B. Reddington, R. L. Rothwell-Jackson, A. G. Strube, A. H. Sears, J. A. Tait, D. G. Twyman, J. V. Williams.

* by proxy.

1. Hospitals Year Book 1955–56. Institute of Hospital Administrators, 75, Portland Place, London, W.1. 1955. Pp. 116. 47*s.* 6*d.*

Society of Apothecaries of London

At recent meetings of the court of assistants, with the master, Dr. Neville Finzi, in the chair, Sir Horace Evans and Mr. Alan Brews were elected to seats on the court; and it was resolved to confer on Sir James Paterson Ross the freedom of the society, honoris causa.

The following were elected to the livery:

J. B. M. Coppock, A. C. Frazer, L. J. Wallace, A. M. Rackow.

The following were elected to the freedom of the society by redemption:

J. D. A. Gray, A. J. C. Gormley, W. D. R. Thompson, Elizabeth A. King-Turner.

The following diplomas were granted:

M.M.S.A.—H. A. Evans, C. J. Goosen.
L.M.S.S.A.—A. H. Sears, M. K. C. Lu, B. M. Hellings-Evans, J. F. Popper, R. N. Gardiner, St. J. Dowling, C. P. K. Watson, B. H. Gooch, R. Dawkins, R. C. Rintoul, G. B. Middle, R. D. Sandfield, A. H. Atkinson, R. M. Burton.
D.I.H.—R. H. R. Aston, J. G. S. Coetzer, J. M. Davies, A. P. Dikshit, H. Miller, K. N. J. Pocock, V. G. Springett.

Liddle Prize

An award of this prize (£200) is to be made in 1958. The subject chosen for the essay is the social and economic aspects of epilepsy. Further particulars may be had from the dean of the London Hospital Medical College, Turner Street, E.1.

Nuffield Dental Fellowships

One of the aims of these fellowships is to enable graduates in medicine and science to qualify themselves to undertake teaching and research on dental health and disease. Further particulars will be found in our advertisement columns.

British Association of Plastic Surgeons

The following officers have been elected for 1956:

President, Mr. Wilfred Hynes; hon. treasurer, Mr. R. P. Osborne; hon. secretary, Mr. J. P. Reidy; other members of the council, Prof. T. P. Kilner, Mr. D. N. Matthews, Mr. Rainsford Mowlem, Mr. R. J. V. Battle, Mr. P. H. Jayes, Mr. J. S. Tough, Mr. A. B. Wallace, and Mr. H. P. Pickerill.

Research into Ageing

Entries for the 1955–56 Ciba Foundation awards for research on basic problems of ageing should reach the foundation not later than Feb. 10, 1956. Information about the awards may be had from Dr. G. E. W. Wolstenholme, the director of the foundation, 41, Portland Place, London, W.1.

Royal Society of Medicine

The next award of the Colyer prize will be made in November. It is offered for the best original work in dental science completed during the previous seven years by a dental surgeon who has qualified from a dental school in Great Britain or Northern Ireland not more than seven years ago. Applications should be submitted to the prize committee of the society, 1, Wimpole Street, London, W.1, not later than June 30.

Institute of Diseases of the Chest, London

Clinical demonstrations will be given by Dr. N. Lloyd Rusby and Mr. T. Holmes Sellors at the institute (in the grounds of Brompton Hospital, Fulham Road, S.W.3) on Fridays from Jan. 6 to March 23. Open lectures will be given on Wednesdays, from Jan. 11 to March 14. All the meetings are open to doctors without fee and will be held at 5 P.M.

Reciprocal Agreement with New Zealand

A reciprocal agreement on social security between the United Kingdom and New Zealand was signed in Wellington on Dec. 20. It will come into operation on April 1, 1956.

Under the agreement the Ministry of Pensions and National Insurance will treat people who come to the United Kingdom from New Zealand as if they had paid contributions to the National Insurance scheme while they were in New Zealand, so as to enable them to qualify for retirement pensions, widows' benefits, and sickness and unemployment benefits. People who go from the United Kingdom to New Zealand will continue, as at present, to receive any retirement pension or widow's benefit for which they may have qualified under the National Insurance scheme. The New Zealand ministry of social security will, however, treat them as if they had been resident in New Zealand while they were living in the United Kingdom, so as to enable them to satisfy the conditions for New Zealand benefits, and will take into account the amount of any National Insurance benefit to which they are entitled. The agreement also provides for the payment of sickness and unemployment benefits under the New Zealand schemes to people from this country.

Anyone who thinks he may become entitled to benefit under the agreement should apply to his local Pensions and National Insurance office.

General Board of Control for Scotland

Mr. A. A. Templeton, C.B.E., J.P., has been appointed a commissioner of the board in place of Sir Robert Bryce Walker, who has resigned.

Dietetics Congress

The second International Congress of Dietetics will be held in Rome from Sept. 10 to 14, 1956. Further particulars can be had from the Associazione Dietetica Italiana, via dei Penitenzieri n. 13, Rome, Italy.

Ministry of Health Appointments

Mr. Robert Turton, the Minister of Health, has appointed Mr. P. Benner to be his private secretary and Mr. E. F. Cooper to be his assistant private secretary. He has appointed Mr. W. M. F. Vane to be his parliamentary private secretary.

Anglo-French Exchange Bursaries

Short-term grants for work in France are offered again this year to British doctors and medical research-workers by the Institut National d'Hygiène in Paris. Application forms can be had from Dr. G. W. Wolstenholme, director of the Ciba Foundation, 41, Portland Place, London, W.1. The closing date for applications is Feb. 4.

Modern Aspects of Rheumatic Disease

The British Postgraduate Medical Federation and Empire Rheumatism Council have arranged a consultants' conference on this subject from March 22 to 24 in London. Sir Francis Fraser will give the opening address at 2.15 P.M. on Thursday, the 22nd. Further particulars may be had from the general secretary of the Council, Tavistock House, (N) Tavistock Square, W.C.1.

Symposium on Venereal Diseases

The first International Symposium on Venereal Diseases and the Treponematoses will be held in Washington, D.C., from May 28 to June 1. It will be sponsored by the United States Public Health Service and the World Health Organisation. Further particulars may be had from Dr. C. A. Smith, division of special health services, Public Health Service, Department of Health, Education, and Welfare, Washington, 25, D.C.

National Association for Mental Health

The annual conference of this association will be held next year at Harrogate on April 12 and 13, under the chairmanship of Sir Charles Morris, vice-chancellor of the University of Leeds. The theme chosen is Mental Health and Personal Responsibility, and the speakers will include Prof. G. R. Hargreaves, Prof. T. Ferguson Rodger, and Dr. Mary Burbury. Further particulars may be had from the secretary of the association, 39, Queen Anne Street, London, W.1.

Fellowships in Clinical Research

The Medical Research Council invite applications for fellowships tenable at centres in the United Kingdom during 1956–57 from medical graduates who wish to prepare themselves for a career in clinical research.

The awards will be made for one year in the first instance and will be renewable annually to a maximum of three years in all. Stipend will be at the rate of £950–£75–£1100 per annum, with superannuation. Applications must be sponsored by the head of the appropriate department in the candidate's university or medical school, and an undertaking will be required that a suitable academic post in a clinical department will be available to the candidate in that institution on satisfactory completion of the period of study under the fellowship. Forms of application may be had from the secretary of the council, 38, Old Queen Street, London, S.W.1, to whom they must be returned not later than March 1, 1956.

Oxford Graduates Medical Club

A dinner will be held at the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2, on Friday, Jan. 20, at 7.30 P.M., when Mr. E. A. Crook will be in the chair. Tickets (25*s*.) may be had from Mr. Selwyn Taylor, 3, Roedean Crescent, Roehampton, S.W.15.

CORRIGENDUM: *Argentaffinoma*.—In the articles and our annotation last week the name of Dr. Albert Sjoerdsma was incorrectly spelt.

Births, Marriages, and Deaths

BIRTHS

TALBOT.—On Dec. 31, at King's College Hospital, to Rosalyn (née Carrick) and John M. Talbot—a son (Derek Michael).

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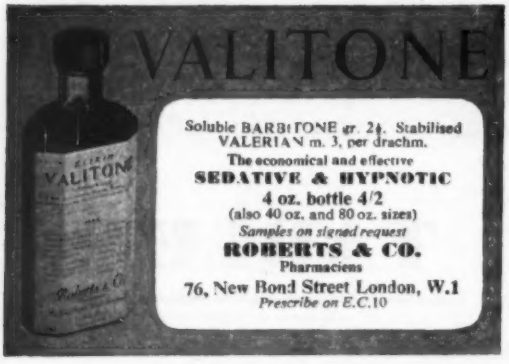

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies but candidates may normally visit the hospital by appointment.

Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

JOHN ROGERS ELLIS, Esq., M.B.E., M.D., F.R.C.P., will deliver the GOULSTONIAN LECTURES on TUESDAY, 17TH and THURSDAY, 19TH JANUARY, 1956, at 5 P.M. at the College, Pall Mall East, S.W.1.

Subject : "Changes in Medical Education."

Any member of the Medical Profession admitted on presentation of card.

By order of the President,
HAROLD BOLDERO, Registrar.

UNIVERSITY OF OXFORD

RADCLIFFE TRAVELLING FELLOWSHIP, 1956

An EXAMINATION for a Fellowship of the annual value of £600, tenable for 2 years, will be held at the University Museum on 18TH FEBRUARY, 1956. Candidates must have passed all the examinations for the Degree of Bachelor of Arts and Bachelor of Medicine, and must not have exceeded 4 years (exclusive of national service) from the time of passing the last examination for the Degree of Bachelor of Medicine.

The examination will take the form of a self-chosen essay and an interview. Further particulars to be obtained from the Secretary of the Medical School, Osler House, 43, Woodstock-road, Oxford.

All applications, with essays, must be sent into the Deputy Regius Professor of Medicine, University Museum, Oxford, by 31st January, 1956.

UNIVERSITY OF LONDON

A COURSE of 2 LECTURES on "Quantitative Aspects of some Mechanical, Nervous and Humoral Factors Controlling the Cardiovascular System" will be given by Prof. B. FOLKOW (Gothenburg) at 5.30 P.M. on 17TH and 19TH JANUARY at King's College, Strand, W.C.2.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

BRITISH POSTGRADUATE MEDICAL FEDERATION UNIVERSITY OF LONDON

"THE SCIENTIFIC BASIS OF MEDICINE"
1955–1956
SECOND TERM : JANUARY–MARCH, 1956

The following lectures, which are designed especially for research workers and specialists in training, will be delivered at The London School of Hygiene and Tropical Medicine, Keppel-treet, W.C.1, on TUESDAY and THURSDAY afternoons at 5.30 P.M. during the second term of the session 1955–56. Admission free, without ticket.

Date	*Lecturer*	*Title*
January		
Thurs. 12th	Professor H. A. KREBS, M.A., M.D., F.R.S. (Oxford)	Steering of Metabolic Processes
Tues. 17th	Dr. W. F. J. CUTHBERTSON, PH.D., F.R.I.C. (Glaxo Laboratories Ltd.)	The Nutrition of Micro-organisms
Thurs. 19th	Professor R. A. MORTON, PH.D., D.SC., F.R.S. (Liverpool)	Vitamin A
Tues. 24th	Dr. K. M. RUDALL, D.SC., PH.D. (Leeds)	Protein Ribbons and Sheets
Thurs. 26th	Dr. M. D. MILNE, M.D., M.R.C.P. (Postgraduate Medical School of London)	Renal Control of Acid Base Balance
Tues. 31st	Dr. D. R. WILKIE, M.D., M.R.C.P. (University College London)	Living Muscle
February		
Thurs. 2nd	Lecturer to be announced	Proteins in Muscular Contraction
Tues. 7th	Dr. J. F. STOKES, M.D., F.R.C.P. (University College Hospital Medical School)	The Treatment of Hepatic Coma
Thurs. 9th	Lord ROTHSCHILD, G.M., SC.D., F.R.S. (Cambridge)	Fertilisation
Tues. 14th	Dr. T. R. R. MANN, M.D., PH.D., SC.D., F.R.S. (Cambridge)	Mammalian Semen. Composition and Function
Thurs. 16th	Dr. E. S. HORNING, M.A., D.SC. (Institute of Cancer Research)	Some Anomalies in Endocrine Carcinogenesis
Tues. 21st	Mr. K. C. RICHARDSON, M.SC. (University College London)	Problems of Mammary Growth and Structure
Thurs. 23rd	Dr. M. W. GOLDBLATT, C.B.E., M.D., M.R.C.P., PH.D., B.SC. (Imperial Chemical Industries Ltd.)	Industrial Toxicology
Tues. 28th	Dr. J. M. BARNES, M.B., B.CHIR. (M.R.C. Carshalton)	The Elucidation of Toxicity
March		
Thurs. 1st	Dr. G. GORDON, B.SC., D.M. (Oxford)	Central Sensory Representation in Relation to the problem of Cutaneous Sensibility
Tues. 6th	Dr. J. A. V. BATES, M.A., M.B., B.CHIR. (M.R.C. Unit—National Hospital for Nervous Diseases)	Observations on the Cortical Motor Areas in Man
Thurs. 8th	Dr. J. F. LOUTIT, D.M. (M.R.C. Harwell)	Recovery from Lethal Effects of Ionising Radiation

THE LONDON HOSPITAL MEDICAL COLLEGE
(UNIVERSITY OF LONDON)

THE LIDDLE TRIENNIAL PRIZE

Under the Will of the late Dr. John Liddle, the Council of Governors of The London Hospital Medical College offer a Prize to the value of £200 for the best Essay on :—

"The Social and Economic Aspects of Epilepsy."

Essays should be sent to the Dean (from whom further particulars may be obtained) on or before 31st July, 1958.

H. B. MAY, M.D., F.R.C.P., Dean.

The London Hospital Medical College, Turner-street, E.1

THE INSTITUTE OF LARYNGOLOGY AND OTOLOGY
(UNIVERSITY OF LONDON)
330/332, Gray's Inn-road, London, W.C.1

Week-end COURSE on FUNDAMENTALS OF ULTRA-SONICS, 27TH, 28TH and 29TH JANUARY, 1956.

The course is intended for Consultants and senior students and will include practical demonstrations. Fee £3 3s.

Detailed syllabus obtainable from the Dean.

THE DENTAL AND MEDICAL SOCIETY FOR THE STUDY OF HYPNOSIS

Applications are invited from practitioners for the SPRING AND SUMMER TUITION COURSES. There are 9 Lectures, 5 Lecture Demonstrations, and individual tuition included in the Course which runs once nightly over 7 weeks. There are also Intensive weekend Courses.

Applications to the Secretary, Mr. KEITH DAWSON-WATTS, 22, Gordon-road, Ealing, W.5.

THE NUFFIELD FOUNDATION

FELLOWSHIPS AND SCHOLARSHIPS IN DENTISTRY

The Nuffield Foundation invites applications, from citizens of the United Kingdom, for Fellowships and Scholarships in Dentistry. To help the advancement of teaching and research on dental health and disease, the Foundation is prepared to award a number of Fellowships :—

(i) to enable selected men and women with dental qualifications to receive such additional training in pure and applied science as is desirable to fit them for an academic career in dentistry (but not to obtain a medical qualification), and ;

(ii) to enable selected university graduates in medicine and science to receive training that will qualify them to undertake teaching and fundamental research on dental health and disease.

The Foundation is also prepared to award a limited number of Scholarships to assist students of outstanding ability attending a university dental school to devote 1 or 2 years to further studies of the basic sciences.

Applications for Fellowships should be received by 1st March annually and for Scholarships by 30th June annually. Copies of the conditions of both Fellowships and Scholarships and the application forms are obtainable from the Director, The Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1.

L. FARRER-BROWN, Director of the Nuffield Foundation.

GUY'S HOSPITAL MEDICAL SCHOOL, London Bridge, S.E.1. Applications are invited for a RESEARCH FELLOWSHIP in connection with the mode of action of anti-tuberculous drugs. Applicants should have experience in biochemistry and microbiology. Salary according to experience.

Applications, with the names of 3 referees, should be sent to the Dean as soon as possible.

UNIVERSITY OF ABERDEEN. Applications are invited for the post of LECTURER IN ANATOMY. The Lecturer will be required to possess a registrable medical qualification. Salary scale (*b*), £1200–£1700 (or scale (*a*), £700–£1075), with placing according to qualifications. Superannuation (F.S.S.U.) and children's allowance. Part of removal expenses refunded.

Conditions of appointment and forms of application should be obtained from the Secretary, The University, Aberdeen, with whom applications (8 copies), giving the names of 3 referees, should be lodged not later than 1st March, 1956. Applicants outside the British Isles may submit 1 copy only.

THE UNIVERSITY OF LIVERPOOL. Applications are invited for the post of Full-time RESEARCH ASSISTANT IN THORACIC SURGERY to take part in a piece of research work approved and financed by the British Empire Cancer Campaign. The appointment will be for 1 year in the first instance, at a salary up to £1250, according to qualifications and experience.

Applications, stating age, academic qualifications and experience, together with the names of 3 referees, should be received not later than 1st February, 1956, by the undersigned, from whom further particulars of the conditions of appointment may be obtained.

STANLEY DUMBELL, Registrar.

THE UNIVERSITY OF LIVERPOOL. Applications are invited from medically qualified and non-medically qualified candidates for the post of ASSISTANT LECTURER IN HISTOLOGY in the Department of Physiology and Histology. The initial salary will be £700 p.a. for a medically qualified candidate ; or £550 p.a., or in special circumstances £600 p.a., for a non-medically qualified candidate.

Applications, stating age, academic qualifications and experience, together with the names of 3 referees, should be received not later than 6th February, 1956, by the undersigned, from whom further particulars of the conditions of appointment may be obtained.

STANLEY DUMBELL, Registrar.

THE UNIVERSITY OF TORONTO, Toronto, Canada. Department of Psychiatry is offering a FELLOWSHIP for postgraduate research and teaching in the Department of Reform Institutions of the Province of Ontario. The appointment is for 1 year in the first instance—salary $4500. The post is vacant now.

Applications to the Secretary, Department of Psychiatry, University of Toronto, 2, Surrey-place, Toronto, Canada.

UNIVERSITY OF MALAYA. Applications are invited for LECTURESHIP IN OBSTETRICS AND GYNÆCOLOGY. Salary scale £1295–£49–£1442/£1540–£56–£1988 p.a. Point of entry determined by qualifications and experience. Allowances: expatriation in range £280–£308 p.a., cost-of-living in range £210–£560 p.a. All paid in Malayan currency. Free passages for appointee, wife, and children under 12 years. Part-furnished quarters at reasonable rent. Provident fund scheme.

Applications (6 copies), naming 3 referees and detailing qualifications and experience, to be received by 6th February, 1956, by Secretary, Inter-University Council for Higher Education Overseas, 29, Woburn-square, London, W.C.1, from whom further particulars may be obtained.

Hospital Services : Senior Appointments

BROMPTON HOSPITAL, S.W.3. The Board of Governors invites applications for the appointment of CONSULTANT RADIOLOGIST (diagnostic) tenable, in the first instance, at Brompton Hospital. Applicants must hold a Diploma in Diagnostic Radiology. The duties involve 3 attendances weekly assessed as 2 notional half-days.

Applications (12 copies), stating date of birth, qualifications and experience in full, with the names of 3 referees, should reach the undersigned not later than 4th February, 1956.

KENNETH A. F. MILES, House Governor.

CHARING CROSS HOSPITAL, W.C.2. Part-time CLINICAL ASSISTANT to the Cardiographic Department. Appointment under para 10 (b) of terms and conditions of service, 3 sessions per week (Monday afternoon, Thursday morning, and a third by arrangement). Tenable from 22nd January, 1956, for 1 year in the first instance, subject to annual review.

Applications, stating date of birth, qualifications and experience, and the names of 3 referees, to reach the undersigned by 16th January, 1956. FRANK HART, Secretary to the Board.

HAMMERSMITH, WEST LONDON AND ST. MARK'S HOSPITALS BOARD OF GOVERNORS. Part-time CONSULTANT PATHOLOGIST required at St. Mark's Hospital, City-road, E.C.1 (which specialises in diseases of the rectum and colon) for 9 sessions per week. Experience in all branches of hospital pathology desirable. Post vacant 25th July, 1956.

Applications, giving particulars of age, qualifications, and experience, together with names of 3 referees, to reach Secretary, The Board of Governors, The Hammersmith, West London and St. Mark's Hospitals, Ducane-road, London, W.12, by 25th February.

KING'S COLLEGE HOSPITAL, Denmark-hill, London, S.E.5. Applications are invited for the post of Part-time CONSULTANT in Radiotherapy for 3 sessions per week, tenable from 1st April, 1956.

Applications (12 copies), giving details of age, qualifications and experience, and with the names of 3 referees, should be sent to the undersigned not later than 11th February, 1956.

S. W. BARNES, House Governor.

ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited for the appointment of CONSULTANT ANÆSTHETIST at the above Hospital as from 1st April, 1956, for sessions on Monday afternoons and Wednesday mornings.

Applications, giving detailed information and the names and addresses of 3 referees, should reach the undersigned (from whom further information may be obtained) on or before 31st January, 1956. R. E. LAWSON, Secretary and House Governor.

ST. THOMAS'S HOSPITAL, London, S.E.1. Physician to the Radiotherapy Department. Consultant status with Membership of the Medical Committee. Whole-time.

Applications (12 copies), naming 3 referees, to the Clerk of the Governors by 4th February, 1956.

CROWTHORNE, BERKSHIRE. BROADMOOR INSTITUTION. (920 Beds for persons of unsound mind of criminal tendencies.) Whole-time CONSULTANT. Wide experience in psychiatry and the D.P.M. necessary. Duties may involve attendance at outpatient clinics. House available.

Applications, naming 3 referees, to Medical Superintendent by 28th January, 1956. Candidates may visit Institution by appointment.

ISLE OF MAN NATIONAL HEALTH SERVICE. Applications are invited for the part-time post of VISITING CONSULTANT OPHTHALMOLOGIST. The post involves regular fortnightly visits to the Isle of Man and the provision of services for 4 notional half-days at each visit. A further notional half-day is added in respect of time spent in travelling between the United Kingdom and the Isle of Man for each visit. Travelling expenses and subsistence allowances in accordance with an approved scale are paid by the Board. Remuneration and conditions of service, including superannuation, under the Isle of Man scheme are essentially the same as those for similar posts in the United Kingdom.

Application should be made on a form obtainable, with any further information desired, from the undersigned, to whom completed forms should be returned not later than 4th February, 1956. Canvassing will disqualify.

G. S. FORSTER, Secretary,
Isle of Man Health Services Board.
3, Harris-terrace, Douglas, Isle of Man.

NEWCASTLE REGIONAL HOSPITAL BOARD. ST. LUKE'S HOSPITAL, MIDDLESBROUGH. (546 Beds.) CONSULTANT PSYCHIATRIST (whole-time or maximum part-time). The major portion of the successful candidate's time will be devoted to child guidance work. An active children's Outpatient Department exists and a 16-Bed Unit is being added. Further particulars from Regional Psychiatrist.

Applications, with names and addresses of 3 referees, to Regional Psychiatrist, Newcastle Regional Hospital Board, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Sunderland Area Hospital Management Committee. (Main geriatric beds: Sunderland General 270; Ryhope General 96; Leeholme 171.) ASSISTANT PHYSICIAN (geriatrics), Senior Hospital Medical Officer status, whole-time or part-time for minimum of 9 notional half-days per week. Higher qualification desirable.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Newcastle Regional Hospital Board, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

LANCASTER MOOR HOSPITAL, Lancaster. Vacancy exists for Locum ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade). Salary according to national scale. Accommodation available for single person. Hospital is large mental hospital serving North Lancashire and part of Lake District.

Apply to Medical Superintendent.

LIVERPOOL REGIONAL HOSPITAL BOARD. Applications are invited for the post of Part-time CONSULTANT DENTAL SURGEON, giving a total of 4 notional half-days per week at Walton (1), Broadgreen (1), Winwick (1), and Aintree and Fazakerley (1) Hospitals. The duties at Broadgreen Hospital will be in connection with the Regional Facio-maxillary Unit, and candidates should have had considerable experience in this type of work.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 28th January, 1956.

VINCENT COLLINGE, Secretary to the Board.

LEEDS REGIONAL HOSPITAL BOARD.

Part-time PSYCHIATRIC CONSULTANT in Psychotherapy for duties amounting to 4 sessions per week on behalf of the Regional Hospital Board at St. James's Hospital, Leeds, Bradford Royal Infirmary, Scalebor Park Hospital and Menston Hospital. The successful candidate will also be eligible for appointment as part-time Lecturer at The University of Leeds and in addition will be required to accept a contract with the Prison Commissioners for duties at Wakefield Prison. Candidates must hold the D.P.M. and have had special training in psychotherapy. Further details of the terms and conditions of the appointment will be provided on application.

Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer scale) for duties at Storthes Hall Hospital, Kirkburton, near Huddersfield (2500 Beds), and associated clinics at Huddersfield, Halifax and Dewsbury. Applicants should hold the D.P.M., or other equivalent qualifications. Resident or non-resident. A large modern unfurnished flat is available if required and accommodation is also available for a single person.

Whole-time ASSISTANT RADIOTHERAPIST (Senior Hospital Medical Officer scale) in the Regional Radiotherapy Service for duties mainly at the Hull Centre under the supervision of the local and visiting Consultants. The Centre has approximately 1200 new cases annually, is equipped for deep and superficial X-ray therapy and radium treatment and is functionally associated with the Centre at the General Infirmary at Leeds. The person appointed to reside in Hull.

Whole-time ASSISTANT OPHTHALMOLOGIST (Senior Hospital Medical Officer scale) for duties at The Royal Eye and Ear Hospital, Bradford, and at the Bradford, Dewsbury, and West Riding County Council School Clinics. The person appointed to reside in Bradford.

Applications (12 copies), stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 28th January, 1956.

LEEDS REGIONAL HOSPITAL BOARD.

Part-time Locum CONSULTANT RADIOLOGIST (9 sessions) for duties at Hospitals in the Bradford A Group. Appointment will be for a minimum period of 15 months.

Part-time Locum CONSULTANT PSYCHIATRIST (4 sessions per week) with special experience in child psychiatry. Duties in association with the Bradford Corporation at the Child Guidance Clinic in Bradford. The appointment will be for a period of 3 months in the first instance but may be renewable after the expiration of that time at 3-monthly intervals for a period of 1 year or more.

Applications, stating age, qualifications and details of appointments held showing dates, with the names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, not later than 18th January, 1956.

OXFORD REGIONAL HOSPITAL BOARD. Assistant PHYSICIAN (geriatrics) Senior Hospital Medical Officer grade, whole-time, to work under the supervision of the Consultant Physician (geriatrics) in the Buckinghamshire area. Duties at Amersham General Hospital (102 chronic sick beds) also at High Wycombe (33 Beds) and Aylesbury (79 Beds). Candidates should have good experience in general medicine as well as a special interest in geriatrics. A higher qualification would be an advantage. Post available 8th April, 1956.

Further information from the Secretary, Oxford Regional Hospital Board, 43, Banbury-road, Oxford, to whom applications (12 copies), stating age, qualifications, &c., and names of 3 referees, should be sent by 31st January, 1956.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT ANÆSTHETIST for the Sheffield No. 1 Hospital Management Committee Group with duties mainly at the City General Hospital, Sheffield. This Hospital has teaching affiliations with the University of Sheffield. There are Professorial Medical and Gynæcological Units, a Department of Thoracic Surgery and a Regional Cardiological Centre.

Further details and application forms from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. **Forms to be returned by 4th February, 1956.**

MANCHESTER. UNITED MANCHESTER HOSPITALS AND MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the post of CONSULTANT NEUROSURGEON, to commence as soon as possible, for 9 sessions a week (8 at Manchester Royal Infirmary and 1 at Parkside (Mental) Hospital, Macclesfield). Candidates must possess a higher qualification in surgery.

Applications (12 copies), together with the names of 3 referees, should be sent to the undersigned not later than 28th January, 1956. F. J. CABLE, Secretary to the Board of Governors.

United Manchester Hospitals, Manchester Royal Infirmary, Manchester, 13.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD. UNIVERSITY OF OTAGO, NEW ZEALAND. JUNIOR SPECIALIST ANÆSTHETIST—Dunedin Hospital—LECTURER IN ANÆSTHETICS—Otago Medical School.

Applications are invited for the above position from those who hold a Degree in Medicine of an approved University. The position is full-time and private practice is not permitted. The position is designated as that of Junior Specialist under the Hospital Employment (Medical Officers) Regulations; salary scale £1290–£1590, plus general wage increase, by annual increments of £50. Commencing salary according to qualifications and experience. Duties will include the practical teaching of anæsthetics to medical and dental students. The position is non-resident.

Applications for the position should be made on the prescribed form obtainable from the Office of the High Commissioner for New Zealand, 415, Strand, London, or from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2, who will supply further information and conditions of appointment. Applications should be in the hands of the undersigned not later than 10 A.M. on Monday, 23rd January, 1956.

W. A. WILLIAMSON, Secretary.

P.O. Box 946, Dunedin, New Zealand.

SOUTH AFRICA. PROVINCIAL ADMINISTRATION OF THE CAPE OF GOOD HOPE. UNIVERSITY OF CAPE TOWN: Joint Medical Staff for Groote Schuur and other Teaching Hospitals. Vacancies.

Applications are invited from registered medical practitioners (registered specialists) for appointment to the following vacant posts at the Groote Schuur Hospital, Observatory, Cape Town:—

DEPARTMENT OF RADIOTHERAPY

MEDICAL PRACTITIONER (Grade E) with salary £1800 p.a. (fixed).

MEDICAL PRACTITIONER (Grade D) with salary £1680 p.a. (fixed).

In addition to the basic salary, a cost-of-living allowance at rates prescribed from time to time by the Administrator is payable to whole-time officials, at present amounting to £234 for a married man and nil for a single person.

The conditions of service are governed by the relevant Ordinances and Regulations as well as the agreement entered into between the Cape Provincial Administration and the University of Cape Town.

The Joint Medical Staff is required to serve jointly the Provincial Administration and the University of Cape Town.

QUALIFICATIONS

Grade E: Must have not less than 3 years experience after registration as a Specialist in Radiotherapy.

Grade D: Must be registered as a Specialist in Radiotherapy.

The successful applicants will be required to submit satisfactory birth and health certificates and their appointment will be subject to the following conditions:—

(i) Appointment will be on contract for 5 years in the case of a citizen of a Commonwealth country or the Republic of Ireland and 6 years in the case of a citizen of European countries other than the United Kingdom and the Republic of Ireland.

(ii) Transport expenses (third class by rail overseas and second or cabin class steamship fare and first class by rail in the Union) necessarily, incurred by the successful applicant and his family, if any, from place of residence to the place of employment in the province will be defrayed by the Administration provided that, if the contract is broken within 1 year of the date of assumption of duty the person appointed must refund to the Administration the full amount paid in respect of transport expenses and if the contract is broken within 5 years of the date of assumption of duty in the case of a Commonwealth citizen and 6 years in the case of a citizen of another European country, the person appointed shall refund to the Administration the pro rata share of the full amount above referred to in respect of the unexpired period.

(iii) The persons so appointed will be offered permanent appointments during the term of contract but not earlier than 3 years or with effect from the conclusion of the contract, provided they have passed an examination in Afrikaans as second language, which examination shall not be lower than the standard required for the Junior Certificate Examination of the Department of Education of the Cape Province and provided further that their services and conduct during the period of contract are satisfactory and their state of health is such as will enable them to continue to discharge efficiently all the duties of the posts in which they will be employed.

Application must be made in duplicate on the prescribed form, Staff 23, which is obtainable from the Staff Clerk, Room 309, South Africa House, Trafalgar-square, London, W.C.2.

The completed application forms must be addressed to the Director of Hospital Services, P.O. Box 2060, Cape Town, South Africa, and must reach him not later than 31st January, 1956.

Candidates must state the earliest date on which they can assume duty.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of Full-time SENIOR HOSPITAL MEDICAL OFFICER (non-resident). Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications to be made on forms obtainable from the undersigned as soon as possible.

F. J. CABLE, Secretary to the Board of Governors.

Hospital Services: Junior Appointments

ANNIE McCALL MATERNITY HOSPITAL, Jeffreys-road, S.W.4. Applications are invited from registered Women medical practitioners for the post of RESIDENT OBSTETRIC HOUSE SURGEON. Post recognised for the D.Obst.R.C.O.G. Appointment is for a period of 6 months, vacant 1st February, 1956.

Applications, stating age, qualifications with dates and nationality, accompanied by copies of 3 recent testimonials, should be sent to the Secretary, Annie McCall Maternity Hospital, as soon as possible.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (Acute General—320 Beds.) Applications are invited for the posts of 2 HOUSE PHYSICIANS (recognised pre-registration posts).

Applications, stating age, qualifications, nationality, and experience, with copies of 2 recent testimonials, to Hospital Secretary, as soon as possible.

BROOK GENERAL HOSPITAL, Shooters Hill-road, Woolwich, S.E.18. SENIOR HOUSE OFFICER (Infectious Diseases Unit), vacant 1st February. This unit provides excellent experience and is one of the Regional Centres for the treatment of bulbar poliomyelitis. 6 months appointment and may be renewed for further period.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

CITY OF LONDON MATERNITY HOSPITAL, Hanley-road, London, N.4. OBSTETRIC HOUSE SURGEONS (2). Recognised for M.R.C.O.G. Vacant 31st January and 15th February.

Application forms obtainable from, and returnable to, Hospital Secretary by 18th January.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of OBSTETRIC HOUSE SURGEON (recognised for the M.R.C.O.G.). Duties to commence 1st March, 1956. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 11th January, 1956.

GERMAN HOSPITAL, London, E.8. (General—157 Beds.) Pre-registration HOUSE PHYSICIAN post now vacant.

Apply, with copy testimonials, to Group Secretary, Hackney Hospital, London, E.9, quoting GH/PHP.

HACKNEY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the 12 months appointment of RESIDENT SENIOR HOUSE OFFICER (anæsthetics) now vacant. Duties shared between German Hospital (General—157 Beds) and the Mothers' Hospital (Salvation Army) (Maternity—110 Beds) with residence at German Hospital. The post offers experience in general surgical anæsthesia in the Group, and facilities are provided to study for higher examinations.

Apply, with testimonials, to Group Secretary, Hackney Hospital, London, E.9, quoting GMH/SHO.

HACKNEY HOSPITAL, London, E.9. (General—841 Beds.) Applications for the 6 months appointment of Pre-registration HOUSE SURGEON (post vacant 1st February; recognised for F.R.C.S.) should reach Secretary at above address by 18th January, quoting HH/PHS.

HAMMERSMITH HOSPITAL AND INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY, Ducane-road, London, W.12. HOUSE OFFICER (gynæcology) required 1st March. Post recognised for M.R.C.O.G.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 14th January.

HOSPITAL FOR WOMEN, Soho-square, W.1. (Affiliated to the Middlesex Hospital.) Applications are invited for a full-time post of RESIDENT SENIOR GYNÆCOLOGICAL HOUSE OFFICER, vacant on 1st April, 1956. Appointment is for 6 months but the holder can apply for an extension of 6 months. Salary in accordance with the terms laid down for medical and dental staffs, less a deduction of £125 p.a. for residential emoluments. The appointment is recognised for the M.R.C.O.G. examination.

Applications, stating age, nationality, qualifications and experience, supported by the names and addresses of 2 referees, must reach the undersigned not later than Monday, 16th January. D. C. EMERY, Secretary.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of REGISTRAR to the Department of Anæsthetics. The post becomes vacant in March, 1956. D.A. or D.A. standard an advantage.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the undersigned by 26th January, 1956. H. BRIERLEY, House Governor.

LONDON JEWISH HOSPITAL, Stepney Green, London, E.1. (130 Beds.) HOUSE PHYSICIAN (pre- or post-registration) required for 6 months commencing 20th January, 1956.

Applications, with copies of testimonials, to be sent to the Hospital Secretary.

LONDON CHEST HOSPITAL. Hospitals for Diseases of the Chest. RESIDENT HOUSE SURGEON required at the Hospital's Country Branch, near Hitchin and Letchworth, Herts. The post is graded as Senior House Officer and the appointment, which provides excellent opportunities for experience in thoracic surgery, is for 6 months.

Applications from registered medical practitioners, stating age, qualifications with dates, and previous appointments held, with copies of 3 testimonials, to be forwarded at once to—

THOMAS BROWN, House Governor.

London Chest Hospital, E.2.

LANGTHORNE HOSPITAL, London, E.11. Leytonstone (NO. 10) HOSPITAL GROUP. Applications are invited for the post of HOUSE OFFICER in the Group Geriatric Unit at above Hospital, vacant mid-February, 1956. The post offers excellent scope for persons interested in this specialty as the most modern methods of geriatric treatment are employed, supervised by a Consultant Geriatrician, with full consultant services in other branches.

Application forms from the Senior Medical Officer, Langthorne Hospital, London, E.11, to be returned by not later than 16th January, 1956.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. Applications are invited from registered medical practitioners for the post of GYNÆCOLOGICAL HOUSE SURGEON (radiotherapy), vacant immediately.

Applications, with copies of testimonials, to the Administrative Officer.

MEMORIAL HOSPITAL, Shooters Hill, Woolwich, S.E.18. PÆDIATRIC HOUSE PHYSICIAN (recognised for D.C.H.), vacant end of February. Not pre-registration. The post entails routine ward and outpatient work as well as experience with neo-nates and includes general and casualty duties.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

MILE END HOSPITAL, Bancroft-road, E.1. (475 Beds.) HOUSE SURGEON (pre- or post-registration), post vacant 6th February, 1956. Post recognised by Royal College of Surgeons.

Application forms obtainable from Physician-Superintendent, to be returned by 13th January, 1956, with copies of not more than 3 testimonials.

MOORFIELDS, WESTMINSTER AND CENTRAL EYE HOSPITAL (MOORFIELDS BRANCH), City-road, London, E.C.1. Applications are invited for the appointment of a REGISTRAR in Anæsthetics, non-resident, full-time. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs, and will be for 1 year in the first instance.

Applications should be made on the appropriate form which can be obtained from the undersigned to whom they should be returned not later than 21st January, 1956.

A. J. M. TARRANT, House Governor.

MOTHERS' HOSPITAL (Salvation Army), London, E.5. (Maternity—110 Beds.) Applications for the 6 months appointment of RESIDENT OBSTETRIC HOUSE SURGEON (registered) (post vacant 1st February; recognised for M.R.C.O.G.) should be sent to Group Secretary, Hackney Hospital, London, E.9, quoting MH/HS.

PLAISTOW HOSPITAL, Samson-street, London, E.13. Applications are invited for appointment of SENIOR HOUSE OFFICER (resident) to the Chest Unit and Infectious Diseases Unit at the above Hospital for 12 months. Previous experience in diseases of the chest is desirable. Excellent experience is afforded in the investigation of chest and infectious diseases cases and there are good facilities for postgraduate study for the M.R.C.P. examination.

Applications, with copies of recent testimonials, to M. J. HUNTLEY, Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 18th January, 1956.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN for 6 months. Vacancy from 1st February, 1956.

Applications, stating age, qualifications, and with not more than 3 testimonials, to House Governor, not later than 19th January, 1956.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (248 Beds.) Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER RESIDENT ANÆSTHETIST, for a period of 6 months, vacant 1st February, 1956. Post recognised for F.F.A.R.C.S.

Application form from Secretary, Tottenham Group Hospital Management Committee (Group 4), to be returned by 18th January, 1956.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Brockley Hill, STANMORE, MIDDLESEX. Applications are invited for the post of Locum RESIDENT ANÆSTHETIC REGISTRAR from 17th March to 17th June, 1956. The Hospital is recognised for the D.A.

Applications, with names of 3 referees, to be submitted not later than 11th February, 1956, to the House Governor, 234, Great Portland-street, London, W.1.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for the post of REGISTRAR in the Dental Department. Duties include every branch of dental and oral surgery, including orthodontics and prosthetics. Applicants should if possible hold a higher dental qualification, or else a medical qualification in addition to a dental one. The appointment is for 2 years, subject to annual re-election, and the remuneration will be in accordance with the Ministry of Health scale for Registrars.

Applications, with names of 3 referees, should be submitted to the undersigned within 14 days from the appearance of this advertisement.

C. C. CARUS-WILSON, Clerk to the Governors.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. HOUSE OFFICER. Appointment will be made for 2 consecutive periods of 6 months, commencing at Hackney-road 1st March, 1956. First period as House Physician and second as House Surgeon and Casualty Officer.

Application forms may be obtained from the Secretary at Hackney-road and should be returned with copies of not more than 3 testimonials on or before 18th January, 1956.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified practitioners for the post of Part-time CLINICAL ASSISTANT to the Department of Physical Medicine at above Hospital for 4 notional half-days per week; graded Registrar. The appointment is for a first period of 6 months as from a date to be arranged.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 25th January, 1956.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified registered practitioners for the post of RESIDENT ANÆSTHETIST. The appointment is for a first period of 6 months as from a date to be arranged; remuneration to be at House Officer rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 25th January, 1956.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (581 Beds.) Applications are invited to fill the post of CASUALTY OFFICER (Senior House Officer), resident on duty. Recognised for F.R.C.S.

Applications, stating age, experience, qualifications, together with names and addresses of 2 referees, to be forwarded to Hospital Secretary immediately.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (581 Beds.) Applications are invited for the post of Whole-time REGISTRAR in Anæsthetics (non-resident). Recognised for D.A. A General Hospital with Departments of General, Orthopædic, Thoracic and Plastic Surgery. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary to Committee, Paddington General Hospital, Harrow-road, W.9, by 23rd January.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Applications are invited for the post of HOUSE SURGEON (pre- or post-registration). Post vacant 24th January, 1956. Tenable for 6 months. Salary, &c., in accordance with national scale.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be forwarded to the Medical Superintendent.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (Acute General—182 Beds.) Applications are invited from registered or provisionally registered practitioners for the post of HOUSE SURGEON for 6 months commencing 3rd February, 1956.

Applications, with 2 recent testimonials, to be sent to the Hospital Secretary by 14th January, 1956.

ST. NICHOLAS HOSPITAL, Tewson-road, Plumstead, S.E.18. SENIOR HOUSE OFFICER (anæsthetics), vacant end of February. Recognised for F.F.A.R.C.S. and D.A. 6 months appointment and may then be renewed. Salary £745, less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. NICHOLAS HOSPITAL, Plumstead, London, S.E.18. HOUSE OFFICER (Casualty, Fracture and Orthopædic Departments), vacant 3rd February. Recognised for F.R.C.S. 6 months resident appointment (not pre-registration). Salary £525 p.a., less £125 p.a. for residence. There is also a Senior House Officer in Casualty Department.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. THOMAS'S HOSPITAL, London, S.E.1. Research REGISTRAR to the Department of Psychological Medicine for a period of 1 year. Successful candidate to devote whole-time to clinical research in psychiatric treatment.

Applications, naming 2 referees, to the Clerk of the Governors by 21st January, 1956.

SOUTH EAST REGIONAL THORACIC SURGERY UNIT. (50 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER, vacant early February. Recognised for F.R.C.S. 6 months appointment and may be renewed for a further period. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. RESIDENT SENIOR ANÆSTHETICS REGISTRAR required from 1st March, 1956. Applicants should hold the Diploma in Anæsthetics.

Applications, with the names of 2 referees, to the Administrator and Secretary by 21st January, 1956.

WHITTINGTON HOSPITAL, N.19. Applications are invited for the position of SENIOR HOUSE OFFICER (anæsthetics) vacant 4th February, 1956. Post recognised for F.F.A.R.C.S. and D.A.

Application forms obtainable from the Group Secretary, 46, Cholmeley-park, London, N.6 (ARChway 3070 ext. 24), and returnable to the Medical Superintendent, Whittington Hospital, St. Mary's Wing, N.19, within 10 days.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy on 6th April, 1956, for a RESIDENT DENTAL HOUSE SURGEON (Senior House Officer). The post is recognised for the Fellowship in Dental Surgery, Royal College of Surgeons. Experience is given in both oral surgery and also orthodontics.

Further particulars and form of application, which must be returned not later than 6th February, 1956, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

THE HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be vacancies for the following Senior House Officers on 15th April, 1956:—

2 HOUSE PHYSICIANS.
1 HOUSE SURGEON.

Further particulars and form of application, which must be returned not later than Monday, 6th February, 1956, are obtainable from the undersigned.

H. F. RUTHERFORD, House Governor and Secretary.

WANSTEAD HOSPITAL, Hermon Hill, E.11. (191 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (graded Senior House Officer). Salary £745 p.a., less £150 p.a. for board, lodging, &c. Recognised for the F.F.A.R.C.S. and D.A.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of SENIOR RESIDENT AND CASUALTY OFFICER (Male), Registrar grade, for 1 year in first instance to start as soon as possible. Board-residence £218 p.a.

Applications (8 copies), with names of 2 referees, to House Governor by 21st January.

WEST LONDON HOSPITAL, Hammersmith-road, W.6. RESIDENT HOUSE SURGEON (general and orthopædics) required 1st March. Pre-registration candidates considered.

RESIDENT SENIOR HOUSE OFFICER (anæsthetics) required 1st March.

CLINICAL ASSISTANT (anæsthetics) required for 2 sessions per week commencing immediately. Salary at the rate of £350 p.a. Possession of D.A. desirable.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary by 16th January.

ABERGAVENNY. GROUP MEDICAL UNIT, NEVILL HALL HOSPITAL. (36 Beds.) NORTH MONMOUTHSHIRE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (resident) at the above, fully equipped, Medical Unit. The Medical Registrar is also resident. The post becomes vacant on 1st February, 1956.

Applications, together with 2 testimonials and details of medical career, should be sent to the Group Secretary, North Monmouthshire Hospital Management Committee, Administrative Offices, Nevill Hall Hospital, Abergavenny, Mon., by 18th January, 1956.

ACCRINGTON. VICTORIA HOSPITAL. (114 acute beds.) HOUSE SURGEON required 9th February, 1956, for above Hospital. Recognised for pre-registration and F.R.C.S.

Applications to Secretary, Blackburn and District Hospital Management Committee, Hospital Management Committee Office, Royal Infirmary, Blackburn, Lancs.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL. SENIOR HOUSE OFFICER in the Rheumatism Research Centre with additional duties in the Area Department of Medicine.

Applications, with names of 2 referees, to the Administrative Officer.

AYLESBURY, BUCKINGHAMSHIRE. TINDAL GENERAL HOSPITAL. (260 Beds.) HOUSE SURGEON (Male or Female). Pre-registration post but registered practitioners invited to apply. The post offers wide experience of general surgery with operative practice; recognised for F.R.C.S. Vacant 18th January, 1956. The acute Surgical Unit consists of 95 Beds. No casualty department.

Please apply, with copies of 2 testimonials, to the Administrative Officer as soon as possible.

ABERYSTWYTH GENERAL HOSPITAL. Mid-Wales HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital. Post recognised for F.R.C.S. Vacant on 31st January, 1956. The post is resident.

Applications, stating age, nationality, qualifications, and experience, accompanied by copies of 2 recent testimonials, should be sent to the Group Secretary, "Orlandon," 31, North-parade, Aberystwyth, within 14 days from the publication of this advertisement.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGEMENT COMMITTEE.

SENIOR HOUSE OFFICER (general surgery) required at Ashton-under-Lyne General Hospital, vacant 27th January.

2 HOUSE SURGEONS required at Ashton-under-Lyne General Hospital. Preference given to pre-registration applicants. Recognised for F.R.C.S. (Eng.). Vacant mid-February.

Applications, with copies of 2 testimonials, to Group Secretary, General Hospital, Ashton-under-Lyne, Lancs.

BIRMINGHAM (near). MARSTON GREEN MATERNITY HOSPITAL, Berwicks-lane, MARSTON GREEN, near BIRMINGHAM. RESIDENT SENIOR HOUSE OFFICER in Pædiatrics required on 1st February, 1956, for 6 months or 1 year. (The latter to be recognised for D.C.H.) Duties in Premature Baby Unit (12 Cots) under direction of Dr. V. Mary Crosse; in Neonatal Department at above Hospital (121 Beds); and in Neonatal and Children's Department at neighbouring hospitals. Previous pædiatric or obstetric experience desirable.

Detailed applications to Hospital Secretary.

BIRMINGHAM (near). MARSTON GREEN MATERNITY HOSPITAL, Berwicks-lane, MARSTON GREEN, near BIRMINGHAM. HOUSE SURGEON (obstetrics) required from 1st March, 1956. 121 obstetric and 10 gynæcological beds. Recognised for Diploma and Obstetric part of Membership of Royal College of Obstetricians and Gynæcologists. Premature Baby Unit. Hospital affiliated to Birmingham Medical School for training of students.

Detailed applications, with copies of 3 recent testimonials, to Hospital Secretary.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM MATERNITY HOSPITAL. Applications are invited from registered medical practitioners for the post of RESIDENT OBSTETRIC HOUSE SURGEON vacant 1st March, 1956. The appointment is recognised for the M.R.C.O.G. and D.Obst.R.C.O.G.

Application forms obtainable from the House Governor, The Birmingham and Midland Hospitals for Women, Showell Green-lane, Sparkhill, Birmingham, 11, to be returned not later than 18th January, 1956. G. A. PHALP, Secretary.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of RESIDENT OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR for duties at the Queen Elizabeth Hospital and The Birmingham and Midland Hospital for Women (Professorial Unit) to commence immediately.

Forms of application with details of appointment may be obtained from, and should be returned not later than 31st January, 1956, to, the House Governor, Birmingham and Midland Hospitals for Women, Showell Green-lane, Birmingham, 11. G. A. PHALP, Secretary.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. Locum Tenens RESIDENT SURGICAL OFFICER (Registrar grade), required for period 20th February, 1956–15th May, 1956. Salary £17 10s. per week.

Apply immediately, in writing or in person, to the House Governor.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL. Applications are invited for the appointment of SURGICAL REGISTRAR (non-resident), in the grade of Registrar, vacant 28th March 1956. Preference will be given to candidates holding a higher qualification. Residence in the Hospital will be required when the Resident Surgical Officer is absent.

Forms of application may be obtained from the House Governor, The Children's Hospital, Ladywood-road, Birmingham, 16, and should be returned not later than 28th January, 1956. G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. (Equipped Beds—959.) HOUSE SURGEONS, available 14th January, 1956. Recognised for F.R.C.S. and Pre-registration Service. Appointments tenable for 6 months.

Apply Medical Superintendent, giving qualifications, age and experience, and enclosing copies of 3 testimonials.

BIRMINGHAM REGIONAL HOSPITAL BOARD. BIRMINGHAM REGIONAL BLOOD TRANSFUSION SERVICE require 1 Part-time Medical Practitioner undertaking 4 notional half-days weekly. Duties attending blood donor sessions in the Region. Remuneration £175 per session p.a.

Applications (10 copies), naming 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 23rd January, 1956. Further information from Director, Blood Transfusion Service Centre, 15, Ampton-road, Birmingham, 15.

BARNSTAPLE. NORTH DEVON INFIRMARY. (510 Beds.) HOUSE SURGEON (pre-registration). Post vacant mid-January.

Applications to Group Secretary, North Devon Hospital Management Committee, 19, Alexandra-road, Barnstaple.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Pre-registration HOUSE SURGEON required immediately. The appointment offers exceptional opportunities for general experience in busy acute Surgical Unit.

Detailed applications, with copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. ASSISTANT PATHOLOGIST (Senior House Officer grade) required in Area Laboratory with attendance at Branch Laboratory, Driffield. Offers experience all branches of pathology. Salary £745.

Detailed applications to Group Secretary.

BRIDGEND GENERAL HOSPITAL, Quarella-road, BRIDGEND. (400 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (E.N.T.). Appointment available immediately. This Hospital is recognised for the major diplomas.

Applications, naming 2 referees, to be addressed to the Group Secretary of the Committee, Mid Glamorgan Hospital Management Committee, 8, Wind-street, Neath.

BRIGHTON GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the appointment of CASUALTY/MEDICAL OFFICER (for casualty and general duties), vacant 30th January, 1956. House Officer grade.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elmgrove, Brighton, as soon as possible.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the position of HOUSE PHYSICIAN to the Geriatric Unit. This is a large unit with an active rehabilitation section, which provides excellent clinical facilities.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elmgrove, Brighton, 7, by 12th January.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of HOUSE SURGEON (orthopædics). The post is recognised as a pre-registration appointment.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, should be sent to the Physician-Superintendent, Brighton General Hospital, Elmgrove, Brighton, as soon as possible.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics) required immediately, for duties throughout Group, mainly at Royal Infirmary, Blackburn. Residence at Queen's Park Hospital, Blackburn. Post recognised for D.A. and F.F.A. R.C.S.

Apply to Secretary of Committee, Hospital Management Committee Office, Royal Infirmary, Blackburn, giving names of 2 referees.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts which fall vacant in January, 1956 :—

Victoria Hospital, Accrington (112 acute beds)
HOUSE PHYSICIAN.

Queen's Park Hospital, Blackburn (644 general beds)
HOUSE PHYSICIAN.

Royal Infirmary, Blackburn (262 acute beds)
HOUSE SURGEON.

All posts recognised for pre-registration purposes. House Surgeon post recognised for F.R.C.S.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKPOOL. VICTORIA HOSPITAL. (348 Beds.) HOUSE OFFICER (surgical). Pre-registration post recognised for F.R.C.S. Modern well-equipped hospital with excellent facilities for gaining experience.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, should be sent to the Hospital Secretary.

BLACKPOOL AND FYLDE HOSPITAL MANAGEMENT COMMITTEE. ANÆSTHETIST (Junior Hospital Medical Officer grade) for duties at hospitals within the Group but main duties at the Victoria Hospital, Blackpool. New establishment includes 2 Senior House Officer posts. Possession of the D.A. an advantage. Residence in Hospital optional. Tenure limited to period of 4 years but holder eligible for reappointment.

Applications, giving details of age, qualifications and experience, together with the names and addresses of 3 referees, should be addressed to the Group Secretary.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR for the Chronic Sick in the Group. The person appointed will be resident at St. Leonard's Hospital, Ringwood, where married accommodation could be made available. He will be required to visit other hospitals in the Group and make visits to patients' homes as required.

Applications for forms of application should be made to the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Gloucester-road, Boscombe, within 7 days of the appearance of this advertisement.

BRISTOL MENTAL HOSPITAL MANAGEMENT COMMITTEE. BARROW AND FISHPONDS HOSPITALS. Applications invited from registered medical practitioners for appointment as SENIOR HOUSE OFFICER. Experience in general medicine or neurology an advantage. The Group includes Modern Admission Units, Neurosis Centre, and Day Hospital, with Departments of Applied Psychology, Electro-encephalography, and Biochemical Research. The appointment offers opportunities for experience in many aspects of acute and chronic psychiatric illness.

Applications, giving details of experience, and names of 3 referees, should be sent to Medical Superintendent, Barrow Hospital, Barrow Gurney, near Bristol.

BRISTOL. SOUTHMEAD GENERAL HOSPITAL GROUP MANAGEMENT COMMITTEE. Required at Southmead Hospital (571 Beds, including 133 maternity) RESIDENT SENIOR HOUSE OFFICER (urological surgery) for 12 months commencing 1st February, 1956. Post recognised for F.R.C.S. examination.

Applications, on forms to be obtained from the Group Secretary, Southmead Hospital, Bristol, to be returned not later than 21st January, 1956.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. ROSSENDALE GENERAL HOSPITAL, RAWTENSTALL. Applications are invited for the post of SENIOR HOUSE OFFICER in Surgery at the above Hospital.

Apply, stating age, qualifications and experience, together with names of 2 referees, to H. WILKINSON, Group Secretary, Bury General Hospital, Bury, Lancs.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) GYNÆCOLOGICAL HOUSE SURGEON required at Highland Court Annexe, a unit of 25 gynæcological beds situated 3 miles from the above Hospital, with all ancillary services available. Recognised for M.R.C.O.G. 6 months appointment. Post now vacant. National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CAMBRIDGE. FULBOURN HOSPITAL. Senior House OFFICER (resident or non-resident). Previous psychiatric experience not required. This Hospital of 953 Beds is linked with the Cambridge University Department of Psychology and Addenbrooke's Hospital, and provides a basic psychiatric training leading to the D.P.M.

Applications, stating age, qualifications and experience, with names of 2 referees, should be sent to—

Dr. D. H. CLARK, Medical Superintendent,
Fulbourn Hospital, near Cambridge.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Medical REGISTRAR (non-resident) for 1 year in the first instance, renewable for second year.

Apply, with full particulars and names of 3 referees, to Secretary by 18th January.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House OFFICER (E.N.T. Department) for 6 months from 25th February. Pre-registration (surgical) or post-registration applicants will be considered.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to the Secretary by 21st January. Interviews 2nd February.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Resident ANÆSTHETIC SENIOR HOUSE OFFICER required 1st February for 1 year. Anæsthetic experience essential.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to the Secretary by 11th January.

CARDIFF HOSPITAL MANAGEMENT COMMITTEE.

(*a*) **Royal Hamadryad General and Seamen's Hospital, Hunter-street, Cardiff**

RESIDENT SENIOR HOUSE OFFICER (surgical) required. Post covers 44 Beds—genito-urinary, general surgery, and outpatients. Department under care of Consultants from United Cardiff Hospitals.

(*b*) **Sully Hospital, Sully, near Penarth, Glam, Thoracic Centre** (324 Beds)

SENIOR HOUSE OFFICER (surgical) required as soon as possible. Experience available in investigation and treatment of all lung and heart diseases in adults and children.

Form of application for each post, from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. PRINCE OF WALES ORTHOPÆDIC HOSPITAL, RHYDLAFAR, CARDIFF. SENIOR HOUSE OFFICER required. Regional orthopædic centre for South Wales area of 220 Beds increasing to 290 and branch of 70 Beds. Outpatients clinic in Cardiff. Single accommodation at hospital at Rhydlafar.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. THE UNITED CARDIFF HOSPITALS. The Board of Governors invites applications for the appointment of SENIOR HOUSE OFFICER (medical) at Llandough Hospital. The appointment falls vacant on 1st February, 1956.

Application forms can be obtained from the Secretary, United Cardiff Hospitals, Cardiff Royal Infirmary, Newport-road, Cardiff.

CARDIFF ISOLATION HOSPITAL. Senior House Officer (resident) required immediately at above Hospital.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARLISLE. CUMBERLAND INFIRMARY. (338 Beds.) Applications are invited for the appointments of 2 HOUSE OFFICERS (general surgery) for the 6 months period commencing 1st February, 1956. The posts are recognised for pre-registration purposes and for the F.R.C.S. examination.

Applications, stating age, giving details of education, training and experience, together with the names of 2 referees, should be sent to the Group Secretary, Cumberland Infirmary, Carlisle as soon as possible.

CHELTENHAM GENERAL HOSPITAL. (226 Beds.) 2 HOUSE SURGEONS (pre- or post-registration) required. Both posts recognised for the F.R.C.S. and giving a large and wide experience in general surgery, gynæcology, orthopædics and genito-urinary surgery. Posts vacant now.

Apply STANLEY T. DAVIS, Group Secretary, General Hospital, Sandford-road, Cheltenham.

CHESTER-LE-STREET. GENERAL HOSPITAL. (204 Beds.) HOUSE PHYSICIAN (general medicine). Approved pre-registration post. Post vacant 1st February, 1956.

Apply, with names and addresses of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

CHESTERFIELD ROYAL HOSPITAL. Senior House OFFICER required at above Hospital for Accident and Orthopædic Department. Post recognised for F.R.C.S. training and offers valuable experience. National salary and conditions.

Apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CHESTERFIELD ROYAL HOSPITAL. House Physician (Senior House Officer grade) required at above Hospital, 31st January, for 36-Bed Unit (shortly to be increased to 63 Beds). Post offers experience in acute general medicine, pædiatrics, diabetics, and dermatology. National salary and conditions.

Apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CHESTERFIELD ROYAL HOSPITAL. House Surgeon required immediately at above Hospital. Post recognised for Pre-registration Service and F.R.C.S. purposes. National salary and conditions.

Apply M. H. BOONE, Secretary.

COLCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for :—

Essex County Hospital, Colchester (188 Beds)
HOUSE OFFICER (surgical).
HOUSE PHYSICIAN.

First, second, third or pre-registration posts, tenable for 6 months.

Essex County Hospital (19 gynæcological beds)
Colchester Maternity Hospital (22 obstetric beds)

HOUSE OFFICER (Male or Female), obstetric and gynæcological. First, second, third or pre-registration post ; tenable for 6 months.

Applications, with copies of 3 testimonials, to Group Secretary, 14, Pope's-lane, Colchester, Essex.

COLCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for :—

Clacton and District Hospital, Clacton-on-Sea (58 Beds)

SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

Applications, with copies of 3 testimonials, to Group Secretary, 14, Pope's-lane, Colchester, Essex.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON required from 1st February, 1956. Senior House Officer or House Officer (Intern) grade. Post recognised for F.R.C.S. and Pre-registration Service. Preference given to provisionally registered candidates. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

CROYDON. MAYDAY HOSPITAL. (611 Beds.) Croydon GROUP HOSPITAL MANAGEMENT COMMITTEE. JUNIOR CASUALTY OFFICER (Senior House Officer grade). Applications are invited for post which is vacant on 27th January, 1956. Recognised for Final F.R.C.S. examination. Particularly good for gaining experience in orthopædics and fracture work.

Application forms obtainable from GEORGE A. PAINES, Secretary, Hospital Management Committee, General Hospital, Croydon.

CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (obstetrics and gynæcology) for duties mainly at Mayday Hospital (80 obstetric and 47 gynæcological beds) and St. Mary's Maternity Hospital (33 obstetric beds). Post is resident and preference will be given to candidates holding M.R.C.O.G. Vacant 1st February, 1956.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, London-road, Croydon, to be returned within 14 days.

CROYDON GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (whole-time) for Group duty. Post resident or non-resident. Duties mainly at Croydon General Hospital (200 Beds) and Mayday Hospital (611 Beds). Candidates must have experience in anæsthetics and possession of D.A. an advantage. Both Hospitals recognised for F.F.A. R.C.S. and D.A.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned within 14 days.

CUCKFIELD HOSPITAL, Cuckfield, near Haywards HEATH, SUSSEX. JUNIOR HOUSE OFFICER (midwifery), now vacant. Appointment tenable for 6 months. Pre-registration post.

Applications, stating age, nationality, experience and qualifications, with names and addresses of 2 referees, to the Group Secretary, Mid-Sussex Hospital Management Committee, at above address as soon as possible.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT HOUSE PHYSICIAN for above Hospital. Post vacant 10th February, 1956. 6 months appointment. Post is recognised for pre-registration purposes.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 14th January, 1956.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. REGISTRAR in Mental Deficiency and Child Psychiatry, Little Plumstead (near Norwich) Mental Deficiency Group of hospitals and Child Psychiatry Service. The Group (1000 Beds) which is progressive and the centre for much outpatient work including child guidance clinics, is recognised as a training centre for the D.P.M. by the Conjoint Board for 1 year. Accommodation available.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 16th January, 1956. Candidates invited to visit Hospital by direct arrangement with Medical Superintendent.

EPSOM, SURREY. ST. EBBA'S HOSPITAL. St. Ebba's AND BELMONT GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR at above Hospital. The Hospital (865 Beds) is principally concerned with the treatment of voluntary cases of good prognosis and has over 1300 admissions annually. There are full facilities for psychological and physical investigations and all modern treatment methods are used. The Hospital has Outpatient Departments and a Special Unit for juvenile psychiatric cases. Tutorials are given by senior staff in preparation for the D.P.M. and arrangements can be made to attend London neurological clinics. Full residential amenities are available. Candidates may visit the Hospital by appointment with the Physician-Superintendent.

Application forms may be obtained from the Group Secretary, St. Ebba's and Belmont Group Hospital Management Committee, Group Office, Belmont Hospital, Brighton-road, Sutton, Surrey, and completed forms should be returned to him within 2 weeks of the appearance of this advertisement.

DONCASTER. WESTERN HOSPITAL. Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER in the grade of Junior Hospital Medical Officer.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, should be forwarded to the Secretary to the Committee, Doncaster Hospital Management Committee, Doncaster Royal Infirmary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House PHYSICIAN (pre-registration), vacant 7th February, 1956.

Apply, giving full particulars with copies of 2 testimonials, to Hospital Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Senior HOUSE OFFICER (anæsthetics), vacant immediately. Recognised for D.A.

Apply, stating full details with copies of 2 testimonials, to Hospital Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House SURGEON (pre-registration) or SENIOR HOUSE OFFICER for general surgery, vacant immediately.

Apply, stating full details with 2 testimonials, to Hospital Secretary.

DURHAM. DRYBURN HOSPITAL. (303 Beds.) House PHYSICIAN (general medicine). Approved pre-registration post. Post vacant 1st February, 1956.

Apply, with names and addresses of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

GLASGOW, S.W.1. SOUTHERN GENERAL HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER required in Department of Anæsthesia. Salary scale £775–£50–£1075 p.a.

Applications, in writing, to the Group Medical Superintendent within 14 days of the appearance of this advertisement.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. In the term beginning 1st February, 1956, vacancies for HOUSE OFFICERS (pre-registration) exist in the following Units : Dermatology, Gynæcology, Acute Geriatrics.

Applications, giving names of 2 referees, should be addressed to the Medical Superintendent.

GRANTHAM AND KESTEVEN GENERAL HOSPITAL. (117 Beds.) RESIDENT HOUSE PHYSICIAN (Senior House Officer or pre-registration intern). General medical and pædiatric. Post vacant 3rd February, 1956.

Applications, with full details and names of 2 referees, to Secretary, 101, Manthorpe-road, Grantham.

GRIMSBY HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE PHYSICIANS (pre-registration or fully registered) required in February ; 1 for Scartho Road Infirmary and 1 for Grimsby General Hospital. Units of 51 and 56 Beds respectively. Medical Library and reading facilities available.

Applications for either post, with names of 2 referees, to the Secretary, Grimsby General Hospital, Grimsby, Lincs.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) 2 HOUSE SURGEONS required. Pre-registration posts, vacant 12th January and 5th February, 1956. National scale of salary.

Apply to Hospital Administrator.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. CASUALTY OFFICER (Junior Hospital Medical Officer) required.

Applications, stating 2 names for reference, should be sent to the Hospital Secretary.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. HOUSE SURGEON (pre-registration) required.

Applications, giving full details and 2 names for reference, should be sent to the Hospital Secretary.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general—first, second, or third post). To commence as soon as possible. Pre-registration post. Recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of HOUSE SURGEON (general, gynæcology, and obstetrics), first or second post. Recognised under F.R.C.S. regulations, pre-registration post. Duties to commence as soon as possible.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HITCHIN HOSPITALS, Hitchin, Hertfordshire. Resident CASUALTY HOUSE OFFICER for duty with the Accident Service and as Orthopædic House Surgeon, required for 6 months in the first instance on 1st February, 1956. Recognised as pre-registration post and for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent immediately to the Medical Administrator, Lister Hospital, Hitchin.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (Female) required to commence duty immediately. The post is recognised as a pre-registration appointment. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) 2 HOUSE SURGEONS required to commence duties on 10th January, 1956. The posts are recognised as pre-registration appointments and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
Huddersfield Hospital Management Committee,
The Royal Infirmary, Huddersfield.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE SURGEONS required for the above Hospital, 1 on 25th January and 1 on 8th February, 1956. Both posts are for a 6 monthly term and both are recognised for the D.C.H. qualification. Salaries according to national scale.

Send replies, with testimonials, to the Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of SENIOR HOUSE SURGEON to the Fracture and Orthopædic Department, vacant on 1st February, 1956. The post is graded Senior House Officer and is recognised for the F.R.C.S. examinations. The Department has 2 Consultants, about 60 beds and a large outpatient attendance ; it offers wide experience.

Applications, stating age, nationality and experience, together with copies of recent testimonials, to the Hospital Secretary.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR required (whole-time). Candidates may visit Hospital by direct appointment.

Application forms obtainable from, and returnable to, Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 17th January, 1956.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. House OFFICER (pre-registration General Medical Unit), vacant 3rd February, 1956. Resident, full-time.

Applications, stating age, nationality, qualifications obtained with copies of up to 2 recent testimonials, to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 17th January, 1956.

KETTERING GENERAL HOSPITAL, Northamptonshire. CASUALTY OFFICER (Senior House Officer). Recognised for F.R.C.S. The post becomes vacant on 1st March, 1956. It offers wide experience of all traumatic conditions, including fractures and some orthopædic cases, with charge of 30 beds.

Applications, accompanied by testimonials, to be sent to the Secretary at the above address.

KINGSTON HOSPITAL, Wolverton-avenue, Kingston-UPON-THAMES. KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following Pre-registration posts which are available on 1st February, 1956.

(1) In General Medicine.
(2) In General Surgery.

Applications, stating age, qualifications and experience, together with 2 recent testimonials, should reach the Physician-Superintendent of the Hospital within 7 days.

LEICESTER. MARKFIELD SANATORIUM. (163 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR or SENIOR HOUSE OFFICER (chest diseases) required. Duties will include attendance at Chest Clinics associated with Sanatorium under supervision of the Consultant. Minor thoracic procedures are carried out and the staff closely associated with the neighbouring major Thoracic Surgical Unit. Remuneration according to status. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 16th January, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LIVERPOOL. BOOTLE HOSPITAL. Applications are invited for the following surgical posts at this small but busy Hospital (119 Beds) :—

SENIOR HOUSE SURGEON from 1st February, 1956.
HOUSE SURGEON from 5th March, 1956.

The latter is a recognised pre-registration post.

Apply to Secretary, Walton Hospital, Liverpool, 9.

LOUTH, LINCOLNSHIRE. COUNTY INFIRMARY. (215 Beds.) GRIMSBY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædic and casualty), now vacant at this General Hospital.

Applications, giving full details, together with the names of 2 referees, should be addressed to the Hospital Secretary.

LOUTH, LINCOLNSHIRE. COUNTY INFIRMARY. (215 Beds.) GRIMSBY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (medical), now vacant, at this busy general hospital.

Applications, with full details, together with names of 2 referees, should be addressed to the Hospital Secretary.

LLANDUDNO GENERAL HOSPITAL, Llandudno. Applications are invited for HOUSE PHYSICIAN at above Hospital. Recognised as pre-registration appointment. The appointment is for a period of 6 months. Salary and conditions of service in accordance with those approved by the Minister of Health.

Applications, stating age, nationality, experience and qualifications, together with the names and addresses of 2 referees, to be forwarded to the Group Secretary, Caernarvon and Anglesey Hospital Management Committee, Plas Gwyn, Ffriddoedd-road, Bangor, within 10 days of appearance of this advertisement.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

General Medicine

Huddersfield Group (50 general medical beds). Non-resident.

Obstetrics and Gynæcology

Hull A Group (84 obstetric and 74 gynæcological beds). Recognised for M.R.C.O.G. Resident.

General Surgery

Pontefract and Castleford Group (110 Beds). May include some duties in the Casualty Department. Married accommodation available.

Applications, stating age, qualifications and details of appointments held showing dates, with names and addresses of 3 referees to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 12th January, 1956.

LEEDS REGIONAL HOSPITAL BOARD. Senior Regis-TRAR vacancies.

Chest Diseases

Castle Hill Sanatorium, Cottingham, near Hull (220 medical and 15 thoracic surgical beds). Non-resident.

Ophthalmology

Duties at the Royal Eye and Ear Hospital, Bradford (32 ophthalmic beds), and additional duties as may be required at other hospitals in the Bradford A and B Hospital Management Committee Groups. Non-resident.

Psychiatry

Stanley Royd Hospital, Wakefield (2000 Beds), and associated clinics. A large modern flat will be available near the Hospital. It is anticipated that the successful candidate will undertake 2 clinical sessions (which may include research) in association with the Department of Psychiatry of the University of Leeds. Candidates must hold the D.P.M. or equivalent qualification.

Radiology

Duties at hospitals in the Hull A, B and East Riding Groups. Non-resident.

Applications, stating age, qualifications and details of appointments held showing dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 12th January, 1956.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. REGISTRAR in Ophthalmology required for 1 year in the first instance from 1st February, 1956. Residence available if required. Terms and conditions of service of hospital medical staff apply.

Applications, stating age, qualifications, previous posts with dates, with 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 1, not later than 18th January, 1956.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. RESIDENT SURGICAL OFFICER of Registrar status required for 1 year in the first instance. Terms and conditions of service of hospital medical staff apply.

Applications, stating age, qualifications, previous posts with dates, with 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 1, not later than 18th January, 1956.

LLANELLY HOSPITAL, Llanelly, Carmarthenshire. (164 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in the Gynæcological Department, with duties in the E.N.T. and Ophthalmic Departments.

Full particulars, stating age, qualifications and experience, should be addressed to the Hospital Secretary.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedford-SHIRE. Applications are invited for the post of SENIOR HOUSE OFFICER for Accident Service including duties in the Hand Infection Unit. Vacant 1st February, 1956, and tenable for 1 year. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 recent testimonials, to be sent to the Secretary by 17th January, 1956.

MAIDSTONE. PRESTON HALL HOSPITAL, British LEGION VILLAGE, MAIDSTONE, KENT. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER at the above Hospital, which contains 330 Beds for the treatment of tuberculosis including major thoracic surgery. Candidates should have good experience in general medicine and in the treatment of pulmonary tuberculosis in adults. Appointment for 1 year in the first instance subject to renewal annually. Salary scale £775–£50–£1075 p.a.

Applications, stating age, qualifications, and experience, with relevant dates, together with names and addresses of 2 referees, to be sent to the Secretary to the Preston Hall Hospital Management Committee by 14th January, 1956.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON, 6 months appointment. Salary at the rate of £425, £475 to £525 according to experience. A deduction at the rate of £125 a year is made in respect of board and lodging and other services provided.

Applications should be forwarded as soon as possible to the Administrative Officer at the Hospital.

MANCHESTER. SPRINGFIELD HOSPITAL, Crumpsall, MANCHESTER, 8. SPRINGFIELD AND SWINTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER at this Mental Hospital of over 750 Beds. Period of tenure, 4 years in the first instance. Modern methods of investigation and treatment are carried out. Facilities will be granted for attendance at the Course for D.P.M. of the University of Manchester (with the Department of Psychiatry of which this Hospital is associated). Preference given to candidates who have previous General Hospital and/or Psychiatric experience. Accommodation is available for a single person. Terms and conditions of the National Health Service apply. Further particulars can be obtained from, and the Hospital may be visited by arrangement with, the Medical Superintendent.

Applications, giving details of age, experience, &c., and the names of 3 referees, to the Medical Superintendent as soon as possible.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of REGISTRAR in Chest Diseases in the Ashton, Hyde and Glossop Group and Oldham and District Group of hospitals. The post offers wide experience in both outpatient clinics and pulmonary hospitals. Residential accommodation may be arranged.

Applications to the Group Secretary, Ashton, Hyde and Glossop Hospital Management Committee, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancashire.

MANCHESTER REGIONAL HOSPITAL BOARD. 2 posts of SENIOR REGISTRAR in Psychiatry as follows :—

(*a*) Oldham and District Group of hospitals, duties include attendance at Consultant Psychiatric Clinics and participation in treatments of inpatients and outpatients at hospitals in the Group. The person appointed may be required to carry out some duties at Prestwich Mental Hospital, near Manchester, either concurrently with other duties or whole-time for not more than 1 year during the period of employment.

(*b*) Prestwich Hospital, Manchester, arrangements may later be made for the person appointed to serve for a period in 1 of the psychiatric teams, based on general and mental hospitals elsewhere in the Region.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by 16th January, 1956.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. Locum SENIOR REGISTRAR to the E.N.T. Department, to commence on 1st February, 1956, or as soon as possible. Whole-time, non-resident post, tenable for 12 months, subject to review. Applicants must possess a higher qualification.

Application to be made on form obtainable from the undersigned and to be returned not later than 11th January, 1956.

F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of SENIOR REGISTRAR. Whole-time post (non-resident). Tenable for 12 months, subject to renewal. Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications to be made on forms obtainable from the undersigned as soon as possible.

F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER. BOOTH HALL CHILDREN'S HOSPITAL. (380 Beds.) RESIDENT SENIOR HOUSE OFFICER (anæsthetics) required to take up duty as soon as possible.

Applications to be sent to the Group Secretary, Booth Hall Hospital, Blackley, Manchester, 9, from whom further particulars may be obtained.

MANCHESTER, 8. CRUMPSALL HOSPITAL. Applications are invited for the resident appointment of SENIOR HOUSE OFFICER in the Genito-urinary Department with general surgical work in another unit at the above Hospital. Recognised for F.R.C.S.

Applications, with full details and names of 2 referees, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MACCLESFIELD HOSPITAL. Applications invited SENIOR HOUSE OFFICER ANÆSTHETIST ; vacant 15th February, 1956, resident or non-resident. Main duties Infirmary branch. Hospital recognised F.F.A.R.C.S. and D.A. purposes. Excellent facilities for study.

Apply immediately to Group Secretary, Macclesfield and District Hospital Management Committee, "Willerby House," Cumberland-street, Macclesfield.

NEATH GENERAL HOSPITAL, Neath. (412 Beds.) Applications are invited for the following medical staff vacancies :—

HOUSE SURGEON.
HOUSE PHYSICIAN.

Appointments available 1st February, 1956, and tenable for 6 months. This Hospital is recognised for all major diplomas and approved by the General Medical Council for Pre-registration Service under Section 2 of the Medical Act, 1950.

Applications, naming 2 referees, to be addressed to the Group Secretary of the Committee, Mid Glamorgan Hospital Management Committee, 8, Wind-street, Neath.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. ROYAL VICTORIA INFIRMARY. DEPARTMENT OF BACTERIOLOGY. Applications are invited for the following vacant appointments :—

(*a*) REGISTRAR.
(*b*) SENIOR HOUSE OFFICER.

The Department is responsible for :—

(1) The routine bacteriology and special investigations in the 4 hospitals (913 Beds) of the Teaching Group.

(2) The laboratory control of the hospital blood bank.

Successful applicants will assist both in the general work and in the research programme.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 3 referees, should be sent to—

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the appointment of SENIOR SURGICAL REGISTRAR at the Royal Victoria Infirmary. The appointment, which is non-resident, will be for 1 year in the first instance and subject to Ministry of Health terms and conditions of service. In any subsequent reappointment the successful candidate may be required for a period to carry out his duties in a hospital under the Newcastle Regional Hospital Board.

Applications, giving full particulars and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the non-resident appointment of SENIOR HOUSE OFFICER to the new Department of Neurology and Neurosurgery at the Royal Victoria Infirmary, due to open in February, 1956. The appointment will be for 1 year and will be subject to the terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

NEWCASTLE GENERAL HOSPITAL. (838 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. The resident (or non-resident) post of SENIOR HOUSE OFFICER (Casualty Department) tenable for 12 months, becomes vacant on 14th January, 1956.

Applications, with 1 copy of 2 testimonials, should be sent to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, as soon as possible.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Darlington Hospital Management Committee

REGISTRAR OBSTETRICIAN AND GYNÆCOLOGIST (whole-time), resident, for duties at Greenbank Maternity Hospital (61 maternity beds) and Darlington Memorial Hospital (26 gynæcological beds). Post recognised for M.R.C.O.G. Single accommodation available.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Newcastle Regional Hospital Board, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6, within 7 days.

Prudhoe and Monkton Hospital (1087 Beds)

SENIOR REGISTRAR PSYCHIATRIST (whole-time). Appointment for 1 year initially and subject to annual review up to 4 years duration. Further particulars from Medical Superintendent.

St. Mary's Hospital, Stannington, near Morpeth (650 Beds)

REGISTRAR PSYCHIATRIST (whole-time), non-resident. Further particulars from Medical Superintendent.

Applications, with names and addresses of 3 referees, to Regional Psychiatrist, Newcastle Regional Hospital Board, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6 within 7 days.

NEWTON ABBOT HOSPITAL, South Devonshire. Senior HOUSE OFFICER (medicine), Male or Female, required immediately. Duties divided equally between 20 acute medical beds in general section and 140 geriatric beds. This officer is also required to stand in when Senior House Surgeon otherwise engaged. Married quarters available.

Applications, stating qualifications, nationality, age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, Torbay Hospital, Torquay, S. Devon.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON to the Gynæcological Department of 25 Beds. This appointment is recognised for the M.R.C.O.G., and may be a pre-registration appointment.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, by 18th January, 1956.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN to the Radiotherapy Department. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, by 18th January, 1956.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON for general surgery. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, by 18th January, 1956.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON to the Radiotherapy and E.N.T. Departments. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, by 18th January, 1956.

NOTTINGHAM GENERAL HOSPITAL. Resident HOUSE SURGEON (pre-registration—first or second post) required about 6th February for 6 months.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident HOUSE PHYSICIAN (pre-registration first or second post), required 11th February for 6 months.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for post of RESIDENT SURGICAL REGISTRAR at the Churchill Hospital, Headington, Oxford, with effect from 16th February, 1956, for 1 year in the first instance.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received not later than 14th January, 1956.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for the post of NON-RESIDENT REGISTRAR in the Department of Pathology, Radcliffe Infirmary, from 1st March, 1956.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should be received not later than 15th January, 1956.

PERTH. COUNTY AND CITY OF PERTH GENERAL HOSPITALS. The following posts will fall vacant on 1st February, 1956 :—

SENIOR HOUSE OFFICER (anæsthetics), Bridge of Earn Hospital.

HOUSE SURGEON or SENIOR HOUSE SURGEON (E.N.T. Unit), Bridge of Earn Hospital. Grade according to experience.

Applications, giving age, qualifications, experience and names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, Greenbank-road. HOUSE SURGEON (pre-registration post), vacant immediately, recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications and experience, with names of 3 referees, to be sent to —

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Saint Mary's Hospital (130 surgical beds)
HOUSE SURGEONS (pre-registration), vacant 25th January, 26th January, 30th January.

Saint Mary's Hospital (74 acute medical beds)
HOUSE PHYSICIANS (pre-registration), vacant 31st January, 2nd February, 24th February.

St. Mary's Hospital (53 pædiatric beds)
HOUSE PHYSICIAN, vacant 15th February.

Royal Portsmouth Hospital (Orthopædic Department —104 Beds)
HOUSE OFFICER (pre-registration), vacant 16th January.

Royal Portsmouth Hospital (70 surgical beds)
HOUSE SURGEON (pre-registration), vacant 1st February.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.
35, Grove-road South, Southsea.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SURGICAL REGISTRAR at Saint Mary's Hospital, Portsmouth (130 acute surgical beds), vacant 22nd February, 1956. The post will include duties in the Department of Thoracic Surgery (15 Beds). The successful candidate must hold the F.R.C.S. degree.

Forms of application may be obtained from the Acting Group Secretary, Portsmouth Group Hospital Management Committee, 35, Grove-road South, Southsea, which should be returned to him duly completed on or before 16th January, 1956. Canvassing will disqualify. Candidates may visit the above Hospital by arrangement with the Acting Group Secretary.

READING. BATTLE HOSPITAL. (374 Beds.) Applications are invited from registered and provisionally registered medical practitioners for post of RESIDENT JUNIOR HOUSE SURGEON in the Area Accident and Orthopædic Department, vacant 1st February, 1956. F.R.C.S. recognised. Also casualty duties. Salary £425–£525 p.a., less £125 board-residence.

Apply, stating age, qualifications with dates, nationality, present position, with copy of 1 recent testimonial, to Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (401 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the resident post of HOUSE SURGEON (gynæcology) vacant 1st February, 1956, and tenable for 6 months.

Write, stating age, qualifications with dates, nationality, and present post, with copy of 1 recent testimonial, to Secretary.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required at Birch Hill Hospital, Rochdale, mid-January. Pre-registration candidates eligible for this post which is recognised for 6 months F.R.C.S. experience.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER (resident) required from 6th February, 1956, for duties in the Casualty and Admissions Department. This is a large General Hospital with specialised departments dealing with all types of acute medical and surgical cases. The post affords good opportunity for gaining tuition and experience.

Applications should be forwarded immediately to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

SENIOR REGISTRAR in Obstetrics and Gynæcology at the Western Infirmary and the Royal Maternity Hospital, Glasgow.

SENIOR REGISTRAR in Psychiatry for duties at Hawkhead Mental Hospital and associated clinics, Glasgow. Married quarters available.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 14th January, 1956.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of REGISTRAR in Dermatology (limited amount of V.D. work involved). The post is non-resident and the main duties are at the Royal Northern Infirmary and Raigmore Hospital, Inverness. Previous experience in dermatology essential.

Forms of application and further particulars of the post are obtainable from the undersigned, to whom applications should be submitted by 25th January, 1956.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Radiotherapy. Duties are mainly in hospitals situated in Aberdeen but the officer appointed may be required to visit other hospitals in the Region. Candidates should have considerable experience in their specialty and preferably hold an appropriate higher qualification.

Applications, giving 2 names for reference, should be submitted by 10th January, 1956, to the Secretary, 1, Albyn-place, Aberdeen, from whom further particulars may be obtained.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Psychiatry—main duties at Kingseat Hospital which comes under the Board of Management for the Aberdeen Mental Hospitals. Candidates should have experience in their specialty and preferably hold an appropriate higher qualification.

Applications, giving 2 names for reference, should be submitted by 10th January, 1956, to the Secretary, 1, Albyn-place, Aberdeen, from whom further particulars may be obtained.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. PSYCHIATRIC UNIT. MARYFIELD GENERAL HOSPITAL AND DUNDEE ROYAL MENTAL HOSPITAL. Applications are invited for the post of REGISTRAR. These active units (including a new E.E.G. Department) and their associated Outpatient Department are principally concerned with the treatment of neuroses and early psychoses and provide a comprehensive training in psychiatry. Candidates, in addition to psychiatric experience, must possess up-to-date knowledge of internal medicine. Salary and conditions of service in accordance with national agreement.

Further particulars and forms of application from the Secretary of the Board, 430, Blackness-road, Dundee, with whom applications must be lodged not later than 21st January, 1956.

SALISBURY GENERAL HOSPITAL. Applications are invited for the post of Locum ORTHOPÆDIC REGISTRAR from 6th February to 11th May, 1956. Accommodation available if required. Salary £17 10s. per week.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Applications are invited for the post of RESIDENT or NON-RESIDENT CASUALTY OFFICER (Senior House Officer) for a period of 12 months, or LOCUM. Post is recognised for F.R.C.S. and is vacant mid-January.

Applications, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON/HOUSE PHYSICIAN to run consecutively in this order from 19th February, 1956, for a period of 6 months in each post. The post is open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SEDGEFIELD. WINTERTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (psychiatry) for a period not exceeding 4 years. The appointment offers valuable experience in all branches of psychiatry at this large mental hospital where all modern forms of treatment are carried out, both at inpatient and outpatient level. The Hospital is recognised for the D.P.M. Resident accommodation is available for married or single applicants at a very moderate charge. Conditions of service in accordance with the latest recommendations of the Whitley Council. Salary £775–£50–£1075.

Applications, stating full particulars of qualifications and experience, together with copies of 2 recent testimonials or names of 2 referees, should be forwarded to the Group Secretary, Winterton Hospital, Sedgefield, co. Durham, within 14 days from the date of this advertisement.

C. W. GILL, Group Secretary.
Winterton Hospital, Winterton, Sedgefield,
Stockton-on-Tees, co. Durham.

SHREWSBURY. ROYAL SALOP INFIRMARY. ORTHOPÆDIC/ACCIDENT HOUSE SURGEON (Senior House Officer). Successful applicant will be allowed to attend for 2 days a month at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, for postgraduate study, with the Consultant. Post recognised under revised Fellowship regulations in respect of 6 months training required for the Final Fellowship examination.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHEFFIELD. CITY GENERAL HOSPITAL. (652 Beds. Recognised for the F.R.C.S. examination.) **SHEFFIELD REGIONAL HOSPITAL BOARD.** Whole-time RESIDENT or NON-RESIDENT CASUALTY REGISTRAR required. The successful candidate to reside at the Hospital when on duty (including "on call" duty). Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 16th January, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. NON-RESIDENT REGISTRAR or SENIOR HOUSE OFFICER in Clinical Pathology required. Grade according to qualifications and experience. Post vacant 1st April, 1956.

Applications, with the names of 3 referees, to be sent immediately to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. JESSOP HOSPITAL FOR WOMEN. Applications invited for the resident post of REGISTRAR or SENIOR HOUSE OFFICER in the Pædiatric Department of the above Hospital. Post vacant 1st February, 1956. Grade according to qualifications and experience. The post is associated with the Department of Child Health in the University of Sheffield, and it is possible that there may be an interchange with the Registrar at the Children's Hospital. The successful candidate may be required to attend 1 outpatient session per week at the Children's Hospital.

Applications, together with the names of 3 referees, should be sent immediately to the Chief Administrative Officer, The United Sheffield Hospitals, Royal Hospital, West-street, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. SHEFFIELD REGIONAL HOSPITAL BOARD. REGISTRAR required at the Sheffield Centre for the Investigation and Treatment of Rheumatic Diseases. Duties to include clinical research.

Applications, with the names of 3 referees, should be sent not later than 30th January, 1956, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL HOSPITAL UNIT. SENIOR REGISTRAR in Orthopædics required at the above Hospital. Non-resident. Fellowship of 1 of the Royal Colleges of Surgeons essential.

Applications, stating age, qualifications and experience, with the names of 3 referees, to be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, by 20th January, 1956.

SOUTH BRENT, DEVON. DIDWORTHY CHEST HOSPITAL. Applications are invited from registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER (Junior Hospital Medical Officer grade) at the above Hospital. This is a hospital of 128 Beds for the treatment of pulmonary tuberculosis and includes a major Thoracic Surgery Unit. Unfurnished bungalow available on Hospital estate.

Applications, stating age, nationality and qualifications, together with names of 2 referees, should be sent, as soon as possible, to the Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth.

SOUTH WARWICKSHIRE GROUP. Registrar in Anæsthetics. Recognised for F.F.A.R.C.S. Duties mainly at Warneford General Hospital (197 Beds). Experience specialty essential.

Application forms from Group Secretary, 50, Holly-walk, Leamington Spa, to be returned before 23rd January, 1956.

SOUTHAMPTON CHILDREN'S HOSPITAL. (Recognised by Conjoint Board for D.C.H.) HOUSE OFFICER required. Total establishment of 3 residents. Salary, &c., as nationally advocated.

Applications, with copies of testimonials, to be submitted immediately to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) ORTHOPÆDIC HOUSE SURGEON required. Post recognised for Pre-registration Service and tenable for 6 months. The Hospital is the centre to which all trauma from a large industrial town and port is directed thus providing excellent experience in the treatment of traumatic conditions; patients with orthopædic conditions are also drawn from a wide area.

Applications, with copies of testimonials, should be sent as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds. Recognised for F.R.C.S.) RESIDENT HOUSE SURGEON required immediately. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHPORT GENERAL INFIRMARY. (Recognised for F.R.C.S. and pre-registration.)

HOUSE SURGEON (general surgery and ophthalmology). Post vacant February.

HOUSE PHYSICIAN. Post vacant February.

Apply, stating age, qualifications, nationality, experience, and enclosing 2 copy testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

STARCROSS, DEVON. ROYAL WESTERN COUNTIES INSTITUTION HOSPITAL GROUP. Applications are invited for the appointment of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female), preferably with some knowledge of mental deficiency.

Applications, with full details of age, qualifications, and experience, together with names of 2 referees, should be submitted to the Medical Superintendent, Royal Western Counties Institution, Starcross, Devon.

SWANSEA. MOUNT PLEASANT HOSPITAL. (238 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of JUNIOR HOSPITAL MEDICAL OFFICER for work in the Medical and Surgical Departments and in the chronic sick wards of the above Hospital.

Applications, stating age, experience and qualifications with copies of 2 recent testimonials, should be addressed to the Hospital Secretary.

SCUNTHORPE. WAR MEMORIAL HOSPITAL. (262 Beds.) Vacancy for HOUSE PHYSICIAN (Senior House Officer) (1 of 2). Busy department with general medicine, pædiatrics, skin and eyes, and large outpatients section offering good experience.

Applications, naming 2 referees, to Group Secretary, Scunthorpe Hospital Management Committee.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) HOUSE SURGEON (House Officer grade) required for general surgical team. Recognised for F.R.C.S. Tenable for 6 months. Preference given to candidates seeking pre-registration post under the Medical Act, 1950.

Applications to Secretary, Mid-Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. The following resident House Officer posts become vacant on 1st March, 1956 :—

St. Helens Hospital (196 Beds)
HOUSE SURGEON.

Whiston Hospital, Prescot (892 Beds)
HOUSE SURGEON (orthopædic).

The above posts are recognised for Pre-registration Service.

Applications, stating age, date of qualification and experience and giving 2 names for reference, should be forwarded to the Secretary, Group Office, Whiston Hospital, Prescot, immediately. Please state for which position application is made.

STOCKPORT INFIRMARY, Stockport. (163 Beds.) Applications are invited for the post of HOUSE OFFICER or SENIOR HOUSE OFFICER (medicine).

Applications, stating age, experience, and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire, immediately.

STOCKTON-ON-TEES. SEDGEFIELD GENERAL HOSPITAL. (336 Beds.) SEDGEFIELD HOSPITAL MANAGEMENT COMMITTEE. Pre-registration HOUSE PHYSICIAN required; immediate vacancy. Adequate staff employed. Excellent conditions.

Apply to the undersigned as soon as possible.
L. WATSON, Group Secretary.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. GYNÆCOLOGY DEPARTMENT. SENIOR HOUSE OFFICER required. Post vacant very shortly. Recognised for M.R.C.O.G. (surgery). Experience in abnormal obstetrics available, but the work is mainly gynæcological.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (general medicine—with pædiatrics) required. Pre-registration post, vacant 6th January, 1956.

Applications, with copies of testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (surgery) required. Post vacant 22nd January, 1956. Recognised pre-registration. Hospital recognised for F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

SULLY HOSPITAL, Sully, Penarth, Glamorganshire. THORACIC CENTRE. (324 Beds.) SENIOR HOUSE OFFICER (medical) required to commence 5th March, 1956. Experience available in investigation and treatment of all lung and hear diseases in adults and children.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

SUTTON AND CHEAM HOSPITAL, Cotswold-road, SUTTON, SURREY. (146 Beds.) HOUSE SURGEON (pre-registration post), vacant now. Recognised for F.R.C.S.

Applications, giving age, qualifications, &c., with copies of testimonials, to the Secretary.

TAUNTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (casualty and orthopædic). Post now vacant. Pre-registration appointment.

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded immediately to the Group Secretary, Taunton and Somerset Hospital, Musgrove Park Branch, Taunton.

WOLVERHAMPTON GROUP.

The Royal Hospital (an Associated Hospital of the University of Birmingham Medical School)

*2 HOUSE OFFICERS (general surgery). 1 vacant mid-January, 1 vacant 1st February.

*HOUSE OFFICER (E.N.T. Department). vacant 8th February.

*Pre-registration posts.

Apply Secretary, The Royal Hospital, with copies of testimonials.

WORCESTER ROYAL INFIRMARY. House Surgeon required (pre-registration or otherwise).

Apply, with copies of testimonials, to the Secretary.

WARWICK (near). KING EDWARD VII MEMORIAL CHEST HOSPITAL, HERTFORD HILL, near WARWICK. JUNIOR HOSPITAL MEDICAL OFFICER (resident). Applications are invited for this appointment in a modern Thoracic Surgical Unit. All forms of major and minor thoracic surgery undertaken, post offers wide general training in non-tuberculous and tuberculous surgery. Facilities available for postgraduate study. Previous experience in specialty is not essential.

Applications to Group Secretary, 50, Holly-walk, Leamington Spa.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited for the post of HOUSE SURGEON (Male or Female) recognised for pre-registration, at the above Hospital which will shortly become vacant. Salary will be £425–£525 p.a., less a deduction of £125 for full residential emoluments. The staffing of the Surgical Unit consists of a Senior Registrar, Registrar, and 2 House Surgeons. The post offers a comprehensive training in surgery.

Apply, giving full particulars, to—
H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WATFORD HOSPITALS. North West Metropolitan REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (resident) required for the above Hospitals. Post vacant immediately.

Application forms obtainable from, and returnable to, the Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, Herts, by not later than 10 days after the appearance of this advertisement.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (198 Beds.) Applications are invited for the post of CASUALTY AND ORTHOPÆDIC HOUSE SURGEON (pre-registration post). Salary according to the National Health Service scale.

Applications to the Administrator with copies of 2 recent testimonials.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (198 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. This is a pre-registration post and is recognised for F.R.C.S. Salary according to the National Health Service scale.

Applications, with copies of recent testimonials, to the Administrator.

WESTON-SUPER-MARE GENERAL HOSPITAL. (107 Beds.) Applications are invited from registered medical practitioners for the following pre-registration appointment (resident) :—

HOUSE PHYSICIAN, vacant 1st March, 1956.

Applications, stating age and qualification, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WEYMOUTH AND DISTRICT HOSPITAL. (124 Beds.) HOUSE SURGEON (Male or Female) required. Resident post, now vacant and tenable for 6 months. Recognised for F.R.C.S. examination, and approved for Pre-registration Service.

Applications, stating age, qualifications, and nationality, together with copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (311 Beds.) CASUALTY OFFICER (Senior House Officer grade), vacant 19th January, 1956. Post recognised for the F.R.C.S. The appointment will be for 6 months in the first instance.

Applications, with copies of 2 testimonials, to the Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Senior HOUSE OFFICER (casualty) required. Department forms part of Accident Service of Windsor Group ; duties include House Surgeon in E.N.T. and Eye Departments. Previous experience in treatment of acute injuries desirable.

Applications, stating age, qualifications with dates and nationality, with copies of recent testimonials, to Hospital Secretary.

WREXHAM. MAELOR GENERAL HOSPITAL. Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence duties on 1st February, 1956. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WREXHAM. WAR MEMORIAL HOSPITAL. Applications are invited for the post of HOUSE SURGEON at the above Hospital to commence duties on 1st February, 1956. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

YORK. MATERNITY AND FULFORD HOSPITALS. SENIOR HOUSE OFFICER in Obstetrics and Gynæcology, required 1st February, 1956. Recognised for M.R.C.O.G.

Applications, stating age, qualifications, experience, nationality, and names of 2 referees, to Group Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

Public Appointments

STOKE-ON-TRENT. CITY OF STOKE-ON-TRENT EDUCATION COMMITTEE. Applications are invited from fully qualified and registered medical practitioners for the post of ASSISTANT SCHOOL MEDICAL OFFICER. Salary scale : £975–£1375 p.a. by annual increments of £50. The duties will consist of routine medical inspections in schools and clinic work. Holidays as school holidays. The appointment is subject to the provisions of the National Health Service superannuation regulations and is terminable by 1 months notice on either side. The successful candidate will be required to pass a medical examination.

Form of application, which may be obtained from the undersigned, should be completed and returned as soon as possible.

H. DIBDEN, Chief Education Officer.
Town Hall, Hanley, Stoke-on-Trent.

AUSTRALIAN REGULAR ARMY. Medical Officers. Applications are invited from legally qualified medical practitioners for appointment to Short-service Commissions in the Royal Australian Army Medical Corps for service anywhere in Australia or overseas. An applicant, who may be single or married, must be a British subject, medically fit Class 1, and registrable in the state of Victoria, Australia. Successful applicants will normally be appointed in the rank of Captain, but in a case of exceptional qualifications an applicant may be appointed in the rank of Major. Annual rates of pay in Australian currency are for Captain £1447 16s. 8d. rising to £1639 9s. 2d., and for Major £1752 rising to £2010 10s. 10d. A marriage allowance of £214 8s. 9d. and a clothing allowance of £31 18s. 9d. are payable in addition to annual salary. Appointment will be for a minimum period of 2 years 3 months, but successful applicants may elect to be appointed for 4 years. Provided his service is satisfactory, a medical officer may elect to be reappointed for periods of 1, 2 or 4 years at the conclusion of any period of appointment or reappointment. A gratuity of £125 Australian currency for each year served will be payable to a Medical Officer on completion of his period of appointment. First-class passages to Australia for Medical Officers appointed and their families will be provided at Government expense.

Applications, which close on 31st January, 1956, may be made by letter to Australian Army Staff, Australia House, Strand, London, W.C.2 (Temple Bar 2435, Ext. 469), and must include the following particulars : name, date of birth, marital status, number of dependants, date and details of qualifications and where obtained, brief details of professional experience. At least 1 personal reference should accompany the application and, in addition, an applicant must nominate 3 personal referees from the teaching staff of universities or from hospitals.

BARBADOS GENERAL HOSPITAL. A Medical Registrar and 2 MEDICAL OFFICERS are required at the General Hospital, Barbados. Candidates must possess qualifications registrable in the United Kingdom, and the officer selected for the post of Registrar is required to hold either a postgraduate qualification or to have not less than 4 years experience in a hospital ward, outpatient clinic or special department. Duties of Medical Officers are general and those ordinarily performed in a large acute general hospital of 500 beds, including medical and surgical obstetrics, theatre and ward work, anæsthetics, casualties and outpatients. The duties of Registrar are as follows : Physician Specialist wards and rounds (covering holidays), post mortems, medical outpatients (new cases), blood organisation, second string night emergencies, 1 Sunday a month Casualty Officer. All officers may be required to perform any other departmental duties as may be directed. Appointments will be on agreement for 3 years ; or on 1 year agreement, for bachelors only, renewable—with return passage for officer only. Salary scales are as follows, starting salary depending upon candidate's age and experience. Medical Registrar $5280–$6240 (£1100–£1300) a year. Medical Officers $3720–$4920 (£775–£1025) a year. A temporary cost-of-living allowance of $156 (£32 10s.) a year is also payable. Free furnished quarters are provided. Free passages to Barbados are provided for the Officer, wife, and children on first appointment and back to the United Kingdom on the satisfactory completion of the agreement, subject to a total maximum cost of $1440 (£300) each way. Income-tax at local rates. Social and recreational amenities are good. Climate is healthy. Educational facilities are available.

Application forms can be obtained from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/28/02).

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
HEMEL HEMPSTEAD ..	HERTFORD ..	21ST JANUARY, 1956

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time ; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age.

The places for which applications are invited are as follows :—

ENGLAND AND WALES

Hereford (Hereford).
Baldock (Hitchin).
Peckham (London, S.E.15).
Rotherhithe (London, S.E.16).
New Tredegar (Newport, Mon.).
Atherstone (Nuneaton).

NORTHERN IRELAND

Stewartstown (Dungannon).

YORKSHIRE. NORTH RIDING EDUCATION COMMITTEE. Vacancy for SCHOOL MEDICAL OFFICER in the York/Northallerton area. Salary £975–£50–£1375. Commencing salary based on previous experience and additional qualifications —e.g., D.P.H., D.C.H., &c.

For form of application apply—
F. BARRACLOUGH, County Hall, Northallerton.

GOLD COAST MEDICAL SERVICE. Pathologist and a SPECIALIST PATHOLOGIST are required by Ministry of Health, Gold Coast.

Pathologist to carry out routine duties of Clinical Pathologists, including haematology, bacteriology, histo-pathology and biochemistry. May be required to perform post-mortem examinations and other duties in connection with forensic medicine. Candidates must have had at least 2 years full-time approved laboratory experience since full registration.

Specialist Pathologist to take charge of a laboratory and to carry out the duties of his specialty. He will have plentiful opportunities for research and will be expected to interest himself in research work involving his specialty. May be required to carry out post-mortem examinations and other duties in connection with forensic medicine and to advice the Ministry on matters involving the Pathological Service in the Gold Coast. Candidates should hold a Diploma in Bacteriology (preferably) or in Clinical Pathology or, alternatively, a Doctorate in Medicine of London University in pathology, this qualification having been supplemented by not less than 4 years full-time laboratory experience in the practice of bacteriology and/or pathology.

Appointment is to the Gold Coast Civil Service on contract for 2 tours from 18 to 24 months each in the first instance with gratuity (taxable) on satisfactory completion of service. Gratuity would be at the rate of £37 10s. for each completed 3 months of service. Basic salary scales would be £1330–£2310 a year for Pathologist and £2400–£2700 a year for Specialist Pathologist. Candidates in the National Health Service may leave the National Health Service but retain their superannuation rights (up to a maximum stay of 6 years). Salaries, in this case, would be in the scales £1055–£1850 a year and £1900–£2200 a year respectively, with gratuity (taxable) of 20% of the aggregate of salary. Starting-point in salary scales are determined according to qualifications and experience. Quarters when available are provided at rental not exceeding £120 a year for Pathologist and £150 a year for Specialist Pathologist. Income-tax at local rates. Free passages provided for Officer, wife, and up to 3 children under 13 years of age. Generous home leave.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/13/010).

PRISON COMMISSION. Applications are invited from registered medical practitioners for the appointment of Full-time MEDICAL OFFICER (Men and Women). The Prison Commissioners are responsible for prisons, Borstal Institutions and Detention Centres in England and Wales and there are vacancies for Medical Officers in London and the provinces. Full-time Medical Officers are employed in the larger establishments where there are usually 1 or more doctors working with a Senior Medical Officer. The work varies a little between one establishment and another, according to the classification of the prisoners. It includes the general medical care of prisoners and inmates, making psychiatric assessments on them, and the provision of medical and psychiatric reports to the Commissioners and to the Courts. It is desirable that candidates should have had experience in psychological medicine but the possession of the D.P.M., while a recommendation, is not essential. Surgical and psycho-therapeutic units employing part-time specialists are established at selected Centres and use is made, in particular cases, of the facilities available in National Health Service hospitals for consultations and special investigations. Candidates must be over 28 years of age. Salary £1500–£75–£1800–£100–£2100 (minimum linked to age 35, minus £50 for each year below that age and plus 1 increment for each year above that age but not exceeding 40). Rates are subject to deduction for posts outside London. In addition there is a pay supplement of £95 or £100 according to salary. Appointments are unestablished in first instance but opportunity for establishment through Civil Service Commission later. Unfurnished quarters are sometimes available at a moderate rental.

Application forms and regulations from B.Y.1114, London Appointments Officer, Ministry of Labour and National Service, 1–6, Tavistock-square, London, W.C.1. Returnable by 28th January, 1956. No original testimonials should be forwarded.

HER MAJESTY'S OVERSEA SERVICE. Medical Branch —TANGANYIKA. MEDICAL OFFICERS with qualifications registrable in the United Kingdom are required in Tanganyika for general duties. Officers would normally be based on a hospital but must be prepared to tour and to assist in training African staff. There is 1 vacancy for which an officer possessing the F.R.C.S. is required; he would be regarded as available for general medical duties but would be allotted surgical work as far as possible. Appointments can be made on a permanent basis with pension (non-contributory) at age of 55, or on short-term contract with gratuity payable on satisfactory completion of service. A doctor in the National Health Service may leave the National Health Service but retain his superannuation rights (up to a limit of 6 years) and receive a gratuity (taxable) of 20% of the aggregate of his salary after his engagement. Salary varies from £1116 to £1836 a year; starting-point is determined by experience and 4 extra increments are given to successful candidates possessing the F.R.C.S., M.R.C.P., D.P.H., or other approved higher qualifications. Temporary cost-of-living allowance at the rate of 10% of salary is also payable, subject to a maximum of £162 a year making gross emoluments of £1228–£1998 a year. Permanent Medical Officers are eligible to be considered at any time for promotion to super-scale posts in Tanganyika and other territories in medical administration or, if they possess higher qualifications and suitable experience, in specialist posts. Quarters are generally available at rental varying from £30 to £78 a year according to size and type, and furniture at a rate varying from £12 to £24 a year. Free passages in both directions for Officer and wife and up to cost of 1 adult fare for children. Taxation at local rates. Annual local leave permissible and generous home leave granted after each tour of from 30 to 36 months. Educational facilities are available.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/8/02).

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH—HONG KONG. PATHOLOGIST required in Medical Department, Hong Kong, to undertake vaccine production, public health laboratory work, clinical pathology and post-mortem work. Candidates must be under 35 years of age, possess a medical qualification registrable in the United Kingdom and have had 3 years professional experience, preferably in pathology.

Appointment on 2 years probation for permanent and pensionable employment. Total emoluments of the post are made up as follows :—

(1) Salary scale from $1395 to $2800 a month—i.e., £1046 5s.–£2100 a year (1 Hong Kong dollar equals 1s. 3d.); starting salary depending upon qualifications and experience;

(2) Expatriation pay, half of which counts as pensionable, varying according to salary from $280 a month (£210 a year) to $375 a month (£281 5s. a year); and

(3) Temporary variable non-pensionable cost-of-living allowance varying according to salary and family circumstances. At present a single officer on the minimum would get approximately £41 a year and a married officer on his maximum salary would get £630 a year.

Free passages in both directions provided for Officer, wife, and up to 3 children under the age of 18. Quarters, when available, are provided at rental of not more than 1/7th of basic salary. Income-tax at local rates. Annual local leave is permissible and generous home leave is granted after each tour of 4 years. Climate is favourable for Europeans—a cool dry winter with well-marked changes of seasons. Education facilities are available. Pension is 1/600th of final pensionable emoluments for each completed month of reckonable service. Officers permanently employed are required to contribute to a Widows' and Orphans' Pension Scheme.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/51/025).

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH—BARBADOS. An ANÆSTHETIST is required at the General Hospital, Barbados. The selected officer will be responsible for the anæsthetic services at the General Hospital under the direction of the Director of Medical Services and will be required to assist in training nurses and medical interns. His duties will include pre- and post-operative care of patients in so far as these duties relate to anæsthetics and to keep records. Candidates must possess qualifications registrable in the United Kingdom and should have had experience in the use of anæsthetics. To qualify for specialist salary scale (see below) candidate must hold a Diploma in Anæsthetics (if held before November, 1953) or be a Fellow of the Faculty of Anæsthetists. Appointment can be made on permanent basis with pension (non-contributory) at the age of 55, or on agreement for 3 years in the first instance (in which event passage arrangements quoted below are slightly different). For officers on agreement arrangements will, if possible, be made to continue their superannuation payments. Salary scale for candidates not possessing specialist qualifications is $4128–$5280 (£860–£1100) a year. For candidates holding specialist qualifications, salary scale is $4800–$6240 (£1000–£1300) a year plus a non-pensionable allowance equal to one-half of fees paid into Public Treasury in respect of special services rendered. A cost-of-living allowance of £32 10s. a year is payable on both salary scales. Furnished quarters are available at rental of 5% of salary (for officers on agreement, free furnished quarters or allowance of 10% of salary). Free passages on appointment are provided for Officer and family up to maximum cost of £300 (or £400 if Governor requires candidate to travel by air). Free passages on leave are provided for Officer and wife only at end of tour of service of 3½ years (pro rata payment on completion of not less than 2 years of tour). Home leave may be granted on full pay after each tour. Income-tax at local rates. Social and recreational amenities are good. Climate is healthy for Europeans. Educational facilities are available.

Application forms from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/28/05).

GOVERNMENT OF MAURITIUS. Medical Officer of HEALTH required in the Insect Borne Diseases Division of the Medical Department in Mauritius. He would be required to take charge of the Division and the whole of the anti-malaria programme under the Director of Medical Services and to undertake any other public health duties assigned to him by the Director. Candidates must have medical qualifications registrable in the United Kingdom, and must possess the Diploma of Public Health. The post would be suitable for a retired Medical Officer who has had experience in malaria control. Appointment would be on contract for 3 years with gratuity (taxable) payable after satisfactory completion of the period of contract at the rate of £50 for each completed period of 3 months service. The salary scale is Rs.14,220–Rs.20,820 (£1066 10s.–£1561 10s.). In addition a temporary cost-of-living allowance is payable of 8% of salary. Selected candidate, if suitably qualified and with sufficient experience may be offered maximum salary. Quarters are not provided, but officers who have not been allocated Government houses will be reimbursed any difference between approved rent paid for a private house (subject to a maximum of Rs.300 per mensem) and the 10% salary they would normally pay for a Government house. For this purpose, officers living in hotels or boarding houses will be regarded as paying half, for the first 21 days, and then a quarter of the board and lodging charge for themselves and their wives in respect of rent. Income-tax at local rates. Free passages in both directions are provided for Officer, wife, and children not exceeding 5 persons in all. Generous home leave is granted after the tour of 3 years.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/52/02).

INVERNESS COUNTY COUNCIL. Applications are invited from registered medical practitioners, preferably holding the D.P.H. or similar qualification, for the appointment of ASSISTANT MEDICAL OFFICER. The candidate appointed will participate in all the work of the department as directed by the Medical Officer of Health. Experience in School Health Service and tuberculosis will be an advantage. Salary £975 p.a.–£50–£1375 p.a., with travelling and subsistence allowances at the rates payable by the County Council. The post is superannuable.

Applications, accompanied by a copy of 1 recent testimonial and the names of 2 referees, should be lodged with the County Clerk, County Buildings, Inverness, by 20th January, 1956.

WEST HAM. COUNTY BOROUGH OF WEST HAM. DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER. Applications are invited from registered medical practitioners holding the D.P.H. or equivalent qualification. Salary £1675–£52 10s.–£1937 10s. p.a. Appointment terminable by 3 months notice on either side.

Further particulars obtainable from Medical Officer of Health, 225, Romford-road, Forest Gate, E.7, to whom applications should be returned by first post 21st January, 1956.

G. E. SMITH, Town Clerk.

West Ham Town Hall, Stratford, E.15.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy"

DEWSBURY, YORKSHIRE. Applications are invited for VACANCY (urban) due to death. List at present approximately 1625 (all prescribing). Intermediate area. Residence and surgery for sale—situation near town centre. Old established practice. Apply on Form E.C.16A not later than 18th January, 1956, to—

R. VOLLANS, Clerk of the Dewsbury Executive Council. Church House, Church-street, Dewsbury (Telephone No. 2191).

HESTON AND ISLEWORTH. Applications invited for VACANCY, previously carried on by a lady doctor. List at present approximately 1016. Intermediate area. Premises will not be available. Apply on Form E.C.16A before 14th January, 1956, to the Clerk, Middlesex Executive Council, Gloucester House, Gloucester-gate, London, N.W.1.

Hospital Services : Non-Medical Appointments

BIRMINGHAM. REGIONAL BLOOD TRANSFUSION SERVICE. JUNIOR SCIENTIFIC OFFICER B.Sc. (preferably honours) in bacteriology, physiology or general science required. Duties include participation in and supervision of routine laboratory investigations but ample scope for original research. Blood-transfusion or hospital experience advantageous but not essential. Whitley Council pay, &c.

Apply Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, immediately. Further information from Director, B.T.S., 15, Ampton-road, Birmingham, 15 (by appointment).

BISHOP'S STORTFORD, HERTFORDSHIRE. PATHOLOGICAL LABORATORY, HAYMEADS HOSPITAL. CHIEF TECHNICIAN required for this Area Laboratory. Candidates should have F.I.M.L.T. and wide experience of practical laboratory technology. Further details on application.

Applications, giving qualifications, nationality, age and experience, with copies of recent testimonials or names of 2 referees, to Hospital Secretary.

HEREFORD. COUNTY HOSPITAL. (335 Beds.) Senior TECHNICIAN OR TECHNICIAN with general hospital laboratory experience wanted immediately. Special experience in haematology an advantage. Applicants should possess the A.I.M.L.T. or F.I.M.L.T.

Applications, together with the names of 2 referees, to be sent to the Consultant Pathologist.

Appointment : Too Late for Classification

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Anaesthetics. DUNDEE TEACHING HOSPITALS. Applications are invited for a post as SENIOR REGISTRAR in Anaesthetics at the Dundee Teaching Hospitals—Dundee Royal Infirmary (510 Beds) and Maryfield Hospital (360 Beds), the main general teaching hospitals associated with the University of St. Andrews. Salary and conditioas of service in accordance with national agreement.

Forms of application and further particulars from the Secretary to the Board, "Braeknowe," 430, Blackness-road, Dundee, with whom applications must be lodged not later than 21st January, 1956.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies

Medical Officer required for Middle East by large Oil Company; preference for those with overseas experience and some knowledge of tropical work. Age about 35 and preferably single. Emoluments total over £1800 p.a.; paid home leave after 2 years; pension fund.—Replies quoting No. 379 to: Box No. 9511, c/o CHARLES BARKER & SONS LTD., 31, Budge-row, London, E.C.4.

Bayer Biological Institute, Exning, near Newmarket, Suffolk. Senior Technician required to take charge of Aerobic Vaccine Production and Media making. Salary in the region of £600 depending on qualifications and experience.—Applications to the Head of the Institute, Beechwood House, 44, Church-street, Exning, near Newmarket, Suffolk.

Bank of England Printing Works. Applications are invited for appointment early next year to the post of Medical Officer (Part-time) at the Bank of England Printing Works Debden, Loughton, Essex. The duties, which will include responsibility for a small nursing staff, will consist of advising the Bank in regard to the health of 1200 employees and of examining new recruits and will necessitate attendance at the Works for an aggregate of 4–5 hours a week. Remuneration will be in accordance with the B.M.A. scale.—Applicants should write to the Medical Officer, Bank of England, London, E.C.2.

Applications are invited from registered medical practitioners between 28 and 35 years for the full-time post of an Assistant Medical Officer at the head office of Unilever Limited in London. The successful candidate will be required to assist in the health supervision of a large clerical staff, a considerable proportion of whom are adolescents. The work will also include the medical examination of candidates for home and overseas appointments, and the re-examination of employees and their families on home leave from both temperate and tropical climates. The post will also involve advising on problems concerning the health and well-being of the working community. Candidates should have a good standard of clinical medicine combined with an interest in preventive and industrial medicine. Experience in general practice, and tropical medicine would be an advantage. Salary will be in accordance with experience, qualifications, and age, and will be not less than £1400 p.a.

The list of those invited to attend for interview will be made out from the letters of application. Candidates are therefore asked to give full details of their training and experience, including their reasons for wishing to make a career in industrial medicine. The names of 3 persons to whom reference may be made should also be included. Applications should be submitted not later than 27th January, 1956, to the Principal Medical Officer, Unilever House, Blackfriars, London, E.C.4.

A Part-time Medical Officer is required for the Rolls-Royce Repair Depot at Hythe-road, Scrubs-lane, London, N.W.10, for a weekly session at the factory and attendance in emergencies. This post is suitable for General Practitioners and preference will be given to those living in the vicinity.—Applications in writing to Dr. A. LEVIN, Grosvenor House, Park-lane, W.1.

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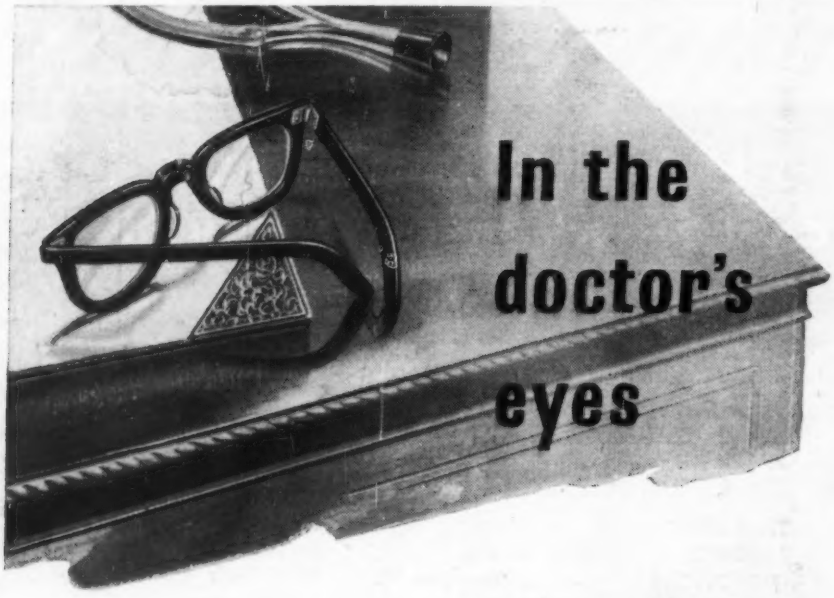

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